The Acquisition of Adverbial Placement in Chinese by Native Speakers of English

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ABSTRACT

This study investigates how native speakers of English acquire adverbial placement in Mandarin Chinese and whether they succeed ultimately. The focus is on the acquisition of the manner and duration/frequency adverbials (D/F adverbials), both of which are VP adverbials. A cross-sectional experiment, consisting of an elicited production task and a grammaticality judgment task, was conducted to examine adverbial placement in the interlanguages of different levels of learners. We hope that this research can provide more insight into the acquisition of Chinese as the target language and more importantly, the universal principles of SLA.

In English, the AdvP adverbials can generally be placed preverbally as well as postverbally, whereas the NP and PP adverbials can only be placed postverbally. In Chinese, however, while all types of adverbials, including the manner adverbs, are placed preverbally, the D/F adverbials are placed postverbally, either before or after the object complement. In other words, D/F adverbial intervention is allowed in Chinese.

The learnability problems are two: first, how the English learners of Chinese unlearn postverbal placement of manner adverbs, probably brought about by negative transfer; second, how the learners learn the novel adverbial placement possibility, D/F adverbial intervention, which is strictly prohibited in L1 English.

The subjects in the experiment were divided into three groups, namely GP 1 (beginning to intermediate learners) (n = 15), GP 2 (advanced learners) (n = 15), and the Control group (native speakers of Chinese) (n = 15).

In the production task, both groups of learners mainly produced preverbal manner adverbials. GP 1 learners, however, also frequently produced preverbal D/F adverbials, though GP 2 learners produced inserted D/F adverbials more often than others. In the grammaticality judgment task, while GP 1 learners preferred both preverbal manner and D/F adverbials, they also marginally accepted inserted manner and D/F adverbials. GP 2 learners, however, have acquired near-native competence; they preferred preverbal manner adverbials and inserted D/F adverbials.

The results suggest that the English learners might have unlearned postverbal manner adverbials at a pretty early stage of their learning. Then, they might undergo a stage where verb raising was optional, or where adverbials were unrestrictedly adjoined to either PredP or VP, resulting in the acceptance of preverbal as well as inserted adverbials. Since GP 2 learners have acquired the near-native competence, we might assume that verb raising could be unlearned. Finally, the learners would come to acquire the target adjunction for the manner and D/F adverbials.

摘要

這個研究主要探討以英語爲母語人仕怎樣學習漢語壯語安置，以及他們最終能否成功。我們把重點放在情壯副詞及動量詞的安置上，而此兩類壯語一般均被稱爲謂語壯語。爲了深入探討學生在不同學習階段的語言系統，我們做了一個橫面實驗，這實驗包括了一個做句練習，以及一個句式語法評估練習。我們希望透過這個研究，令人們更了解外國學生怎樣學習漢語爲第二語言，以及學習第二語言的普遍規律。

在英語裡頭，副詞壯語一般可放在動詞的前面或後面，但名詞壯語及介詞結構壯語則只能放在動詞的後面。在漢語裡頭，除了動量詞外，所有的壯語都只能放在動詞的前面；動量詞則是唯一能在動詞後面出現的壯語，而且它們更可在賓語的前面或後面出現，換句話說，漢語容許動量詞安插在動詞與賓語之間。

這裡顯示出兩個學習漢語的困難：第一，英語人仕必須去除可能由母語轉移過來的置於賓語後的情壯副詞；第二，他們亦必須學會漢語中的動量詞是可以放在動詞與賓語之間，而雖然在他們的母語裡，副詞是不可能放在這個位置的。

參與實驗的人仕分爲三組，第一組（十五人）是初級至中級的學生，第二組（十五人）是高級學生，而第三組（十五人）是以漢語爲母語的人仕。

在做句練習裡，兩組學生都主要只造出情壯副詞置於動詞前的句子。雖然第二組的學生已經常把動量詞安插在動詞與賓語之間，但第一組的學生却常常把動量詞置於動詞的前面。在句式語法評估的練習裡，雖然第一組的學生大都較喜歡情壯詞及動量詞置於動詞前的句子，但他們也在某程度上接受安插在動詞與賓語之間的情壯詞及動量詞。第二組學生的語法系統則已差不多接近漢語的語法系統：他們較喜歡置於動詞前的情壯詞，及置於動詞與賓語之間的動量詞。

實驗的結果證明英語人仕在學習漢語的初期，已不接受賓語後的情壯副詞。此外，他們亦經過一個動詞可隨意上移的階段，或一個副詞可隨意安插在 **PredP** 或 **VP** 的階段，致使他們可同時接受動詞前及動詞和賓語之間的壯語。最後，第二組學生的實驗結果表明英語學生在學習後期是可知道漢語的動詞是不能上移的，而此後他們亦學得情壯副詞及動量詞是安置在結構樹中不同的短語裡頭的。

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Chapter 1

Introduction

1.1 An Overview

This study investigates how native speakers of English acquire adverbial placement in Mandarin Chinese (henceforth Chinese), and ultimately whether they succeed in acquiring the target structures of Chinese adverbial placement. An experiment has been conducted to look into adverbial placement in learners' English-Chinese interlanguage (IL) grammar and the results will be reported and analyzed. As much previous research was confined to acquisition of English and only until recently, did Second Language Acquisition (SLA) research shift attention to acquisition of Chinese, (Jin 1989, Jin 1994, Polio 1995, Yuan 1995) we hope this research can extend the empirical database on the acquisition of Chinese as a second language, and consequently help to investigate the universal principles of SLA.

This study mainly looks into the acquisition of two types of adverbials: the manner adverbials, e.g. *hen kuai de* (very quickly), and the duration e.g. *liangnian* (two years) and frequency adverbials, e.g. *liangci* (two times) (henceforth D/F adverbials), all of which are traditionally called VP (verb phrase) adverbials. (Jackendoff 1972) The research focus chiefly falls on the (un)learning of two adverbial placement patterns. The first is the unlearning of postverbal manner adverbial placement in Chinese. English AdvP (adverb phrase) manner adverbials can generally be placed preverbally and postverbally. For example,

(1) a. John politely asked me to pass him the salt.
b. John asked me politely to pass him the salt.

The Chinese AdvP manner adverbials, however, must be placed preverbally, but not postverbally, as shown in (2).

(2) a. 他不情願地付了錢。
Ta bu qingyuan-de fu-le qian.

He unwilling-ADV give-ASP money.

"He gave out the money unwillingly."

b. *他付了錢不情願地。

Ta fu-le qian bu qingyuan-de.

He give-ASP money unwilling-ADV.

"He gave out the money unwillingly."

If transfer of adverbial placement from L1 (first language) to IL occurs (Trahey & White 1993, Jin 1989), the learners may also accept postverbal Chinese AdvP manner adverbials. No input data seem able to refute this adverbial placement pattern and consequently, postverbal placement of manner adverbials may be unlearnable.

The second research question, to the contrary of the first, is whether the learners can acquire a novel adverbial placement pattern if positive evidence is available. D/F adverbial intervention is allowed in Chinese. See (3) for duration adverbial intervention and (4) for frequency adverbial intervention.

(3) 他畢業以後，教了幾年書。

Ta biye yihou, jiao-le jinian shu.

He graduate after, teach-ASP few-year book.

"After he graduated, he taught for a few years."

(4) 他看了幾次手錶，心裡慌得要命。

Ta kan-le jici shoubiao, xin li huang de yao ming.

He watch-ASP few-time watch, heart in tense de need life.

"He watched the watch a few times and was very tense."

It is not grammatical, however, for any adverbials to occur between verb and object in English. Therefore, adverbial intervention is the novel placement pattern that the English learners of Chinese should acquire. Input data are available to evidence this placement possibility.

The experimental results show that the English learners of both two different levels succeeded in unlearning postverbal adverbial placement. The less advanced

learners, however, overgeneralized the preverbal placement pattern to all adverbials, including D/F adverbials, though they also marginally accepted adverbial intervention of both D/F and manner adverbials. Most advanced learners, however, showed near-native competence in various adverbial placement patterns. In other words, they generally placed manner adverbials preverbally and D/F adverbials between verb and object.

The results of the advanced learners seem to suggest that adverbial placement is learnable. Negative transfer of postverbal placement of manner adverbials did not generally occur among the less advanced learners, even though overgeneralization of preverbal placement to D/F adverbials was supported. We also see evidence of optionality of verb raising in the IL grammar. The unresolvable question is the triggers for the acquisition of different modification scope of different Chinese adverbials.

This thesis is divided into 5 chapters. The first chapter presents the background of this study and how it is related to the general issues of SLA. In chapter 2, the linguistic facts about adverbial placement in English and Chinese will be discussed and a comparison of different placement positions of different types of adverbials in English and Chinese gives rise to the learnability problems. Chapter 3 stipulates the major theoretical accounts on adverbial placement in both English and Chinese. The controversies center around basic word order, verb raising and adverbial adjunction of the two languages. Chapter 4 illuminates the methodology of the study: how the experiment was designed and conducted, and it also reports the results of the experiment. Chapter 5 discusses and analyses the results, and hypothesizes the developmental stages of the learners' IL grammar about adverbial placement.

1.2 Previous Research

Not much SLA research has studied the acquisition of adverbial placement. White and Trahey have published a series of papers on acquisition of English adverb placement by French learners. (White 1991, Trahey and White 1993, Trahey 1996) As for acquisition of Chinese adverbial placement, Jin (1989) is the only published work to date. These studies will be discussed in some detail in Section 1.2.1 and 1.2.2, and based on their studies, we construct some hypotheses on acquisition of Chinese

adverbial placement by English speakers.

1.2.1 White and Trahey (White 1991, White & Trahey 1993, Trahey 1996)

Adverb placement was brought to the attention of SLA researchers by Pollock (1989), who posits that adverb placement in French and English is not an isolated idiosyncratic grammatical property but is associated with a cluster of other properties to form a parameter of verb raising. (See section 3.1.1.1 in Chapter 3 for detailed discussion.) These properties include adverb placement, question formation, the syntax of negation, and floating quantifiers. The syntactic properties of adverb intervention, movement of lexical verb before subject in question formation, and postverbal negators and quantifiers are all subsumed by the parametric value of verb raising in French. In French, it is postulated the lexical verb can raise to Infl, passing the adverb, which is base-generated at the Spec of VP. The result is that the adverb intervenes between verb and object in surface structure. In English, by contrast, the lexical verb cannot move, resulting in the preverbal placement of the adverb. Intervention of adverb between verb and object complement is thus not permissible in English.

Drawing on the theoretical constructs of Pollock (1989), White did an experiment on acquisition of English adverb placement by French speakers. White (1991) found that the students who had received both positive and negative evidence on adverb placement in English out-performed those who had only received instructions on question formation, which was supposed to be one of the possible triggers for the absence of verb raising in English. White then concluded that negative evidence was essential for acquisition of adverb placement in English since if no positive evidence informed the French learners that adverb intervention was not allowed in English, they could not recognize its impossibility. However, even though the two post-tests suggested that negative evidence was able to help the French students unlearn adverb intervention, the follow-up test conducted one year after the original testing showed that the linguistic knowledge that had supposedly been acquired by the group of learners with the provision of negative evidence of adverb placement in English could not be retained. In other words, they still held the French verb-raising parametric value in their English IL grammar, allowing adverb intervention.

The second study was a follow-up of White (1991). Trahey and White (1993) included in the experiment another group of students who were flooded with only positive evidence on adverb placement in English. Results showed that preemption did not occur; this group of student accepted both preverbal adverb placement and adverb insertion. It was then argued that if the acquisition of a new adverb placement position did not preempt other placement possibilities, negative evidence was a prerequisite to inform the learners that some structures were not possible in the target language.

Trahey (1996) further studied the long-term effects of parameter resetting. The group of students having received solely positive evidence on adverb placement in English were re-tested one year after they had participated in the previous experiment. It was intended to see whether continuous in-flood of primary linguistic data on adverb placement could help the students reset the parameter. Results showed that although the students accepted preverbal adverb placement, they also accepted the non-target adverb placement pattern transferred from French, that is, adverb insertion between verb and object. It was then argued that primary linguistic data alone was insufficient to reset the parametric value in a L2 (second language) environment.

To sum up, the results of this series of experiment suggest that first, L2 learners might transfer their L1 (first language) parameter setting or structures to their ILs and second, positive evidence alone might be inadequate to eradicate the non-target structures already generated in the IL.

The problem of transfer has been a distinctive issue in SLA ever since the era of Contrastive Analysis (CA), which however was mainly studied for pedagogical purposes. It was thought then that a comparative study of two languages could bring out some insights of their similarities and differences. Similarities would lead to easiness of learning whereas differences would lead to difficulty of learning, based simply on the hypothesis that a learner would transfer all the linguistic properties from his first language to the IL. In other words, the IL grammar (at least the initial IL grammar) might resemble the L1 grammar of the learner in every instance. This simple-minded thought could not stand long as empirical evidence proved that learners did not transfer all the knowledge of their first language to the IL. What seemed to be easy to acquire based on similarities between the first and target language might turn out to be difficult

while on the contrary, what was presumed to be difficult to acquire incurred no difficulty to the learners. (Gass & Selinker 1993, Ellis 1994)

The recent research cast transfer in the UG framework and centered on studying the developmental process of the learners' IL with special attention being paid to the possibility of transfer at each stage. Nowadays, though the issue of transfer is still inconclusive, we have gained some theoretical insights into the transfer processes in SLA. Transfer is generally considered as an integral part in second language acquisition and some transfer during learning is obvious (Trahey and White 1993, Felix and Weigl 1991) even though some aspects of grammar may be immune to transfer. (White 1985) Therefore, at present we still do not know what will or will not in fact be transferred in a particular instance. (Gass & Selinker 1993, Ellis 1994)

Apart from transfer, the availability of positive and negative evidence is another controversial issue in SLA. The argument centers on whether negative evidence is essential in eradicating the non-target structures brought about by transfer and/or non-target generalization. Positive evidence of the target language may only be able to inform the learners of the target structures but might be insufficient to remove the non-target structures in the IL. Negative evidence may then be required to help the learners unlearn the non-target structures.[1] This constitutes the logical problem in SLA. White (1985, 1989) argues that in many instances, positive evidence alone may not be sufficient to eradicate some existing structures in the IL. In the case of acquisition of English adverb placement by French learners, positive evidence can only inform the learners of the target preverbal adverb placement, which, however, cannot preempt adverb intervention in the IL transferred from French. As a result, negative evidence may be required for the learners to unlearn adverb intervention. (Bley-Vroman 1989) But in many learning situations, negative evidence is unavailable and the learners can only rely on the degenerate and finite input data (Hornstein and Lightfoot 1981) to

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[1] Schwartz and Gubala-Ryzak (1992) argue for the ineffectiveness of negative evidence in SLA. They argue that linguistic competence can only be acquired by registering primary linguistic data and this is also evidenced by the non-retention of the knowledge in the follow-up test of the subjects who had received both positive and negative evidence in White (1991). See White (1992) for counter-arguments.

learn the target structures and unlearn the non-target ones. The logical problem, then, is how L2 learners unlearn the non-target structures in the absence of the non-readily available negative evidence.

1.2.2 Research on acquisition of Chinese as a second language

Not many SLA studies have investigated the acquisition of Chinese. Jin (1989) was a pioneer in this respect, covering various aspects of Chinese syntax, semantics and pragmatics, which will be discussed later in this section. Besides, Jin (1994) and Yuan (1995) investigate the acquisition of Chinese topic structure by English speakers. The former found that discourse elements like topics were transferable. The less advanced English learners of Chinese transferred the subject prominent structure to their ILs, resulting in a rejection of topic structures, which are characterized as a typical grammatical and discourse property in Chinese. In spite of the effect of transfer on ILs, the topic structures were learnable because the English learners succeeded in proceeding from their subject prominent ILs to the target topic prominent structures. Yuan (1995) does not look into all topic structures but only studies the acquisition of base-generated topics by English speakers. The results showed that the elementary and intermediate learners did not quite accept base-generated topics even though the advanced learners accepted them as readily as the native controls. This suggested once again that topic structures were learnable. Another study by Polio (1995) looks at the acquisition of zero pronouns in Chinese by English and Japanese learners, both of whom were found to have the tendency to avoid zero pronouns, in favor of full noun phrases.

The three studies discussed above mainly look into the acquisition of Chinese discourse structures.[2] Jin (1989), however, touches on syntactic, semantic and discourse structures, in search of a composite theory of universal and typological parameters to account for IL process in terms of developmental patterns, learning difficulty, and possibility of transfer. The study investigates the acquisition of many

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[2] The structures that Yuan (1995) looked into were not treated merely as discourse structures. His study aimed at investigating whether the English learners allowed base-generated topics in the Chinese ILs, as opposed to moved topics, the only possible topic structure in English.

aspects of Chinese grammar, for example, adverbial placement, aspect markers, topic features and pragmatic functions of *ba, jiu* and *cai*. My discussion here will only focus on word order.

Three tasks, the grammaticality judgment task, the oral task and the written production task, were designed to test the subjects. Two problems concerning manner and D/F adverbial placement were found. The first was interference and the second was overgeneralization, the detail of which will be discussed in Section 1.3 and 1.4. The shortcomings of the whole research are many. First, the sentences containing adverbials for judgment are limited in number. The total number of sentences in the grammaticality judgment task for adverbial placement was only 10. Within these 10 sentences, many different types of adverbials were included, for example, the manner adverbial, the locative adverbial, the duration and frequency adverbial, and the prepositional phrase (PP) adverbials. Adverbials functioning as complements and adjuncts were both included and the descriptive complement with *de* was also tested.[3] Therefore, the number of sentence for each semantic or syntactic adverbial category might be limited to one only. Convincing generalization on placement of a particular type of adverbial cannot be reliably attained from the judgments of only one sentence.

The two production tasks were scored on the basis of errors. Errors were counted and classified. But Schachter (1974) has already argued that error analysis alone can be tricky and problematic because the learners can avoid using some structures in order to get around the errors. The simplest example is to use simple sentences instead of complex sentences. If one counts the errors from a writing containing only simple sentences, the number of errors may be minimal. But the writer may not even know how to compose complex sentences and thus, her linguistic competence is nonetheless close to the natives' even though her writing is error-free, like the natives'.[4] In Jin (1989), the advanced learners were found to be more error free in their oral and written production but avoidance could be a factor. In addition, Jin did not mention how many

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[3] An example of the descriptive complement with *de* is *Ta chi-de hen kuai* (He ate quickly).

[4] Schachter (1974) found that the Chinese and Japanese learners of L2 English made fewer errors in the use of relative clauses than the Persian or Arabic learners because they produced far fewer relative clauses.

errors involving word order were on adverbial placement. As a result, we have no precise figures about the errors involving adverbial placement.

Another shortcoming is that Jin (1989) did not study the possibility of adverbial intervention in Chinese. She only tested the preverbal placement of all adverbials except the D/F adverbials, and the postverbal (to be more accurate, post-object) placement of D/F adverbials and other adverbial complements.

To sum up, in the light of many deficiencies, Jin's (1989) findings and conclusions cannot be considered reliable and definitive on the acquisition of word order in Chinese. But her contributions to acquisition of Chinese are beyond doubt. Many errors made and IL structures produced by the learners are valuable data for later research. Therefore, her study laid the foundation for future work, including this one.

1.3 Adverbial placement in English and Chinese and the learnability problems

In this section, we present a preview for adverbial placement patterns in English and Chinese and proceed to discuss the learnability problems in learning Chinese adverbial placement by English speakers. More linguistic facts about adverbial placement will be described in the next chapter. In chapter 3, we go into the theoretical accounts for adverbial placement in the two languages.

In English, adverbial placement hinges on the syntactic category of the adverbial in concern. The VP AdvPs (adverb phrase), e.g. *elegantly* can generally be placed preverbally as well as postverbally whereas the VP NP (noun phrase), e.g. *ten times* and PP (prepositional phrase) adverbials, e.g. *on occasions* can only be placed postverbally. The semantic content of the adverbial appears not to have any effect on the placement patterns. For instance, a manner AdvP adverbial e.g. *quickly* can occur in a preverbal as well as postverbal position but a manner NP or PP adverbial e.g. *this way* and *in this manner* can only occur in a postverbal position. As expected, a particular semantic adverbial category tends to be realized in a particular syntactic form. The most obvious case is the duration adverbial e.g. *for ten years* as it must be in the PP form.

In Chinese, by contrast, the semantic category of the adverbial in question is a factor for its placement. While most adverbials in various syntactic forms must be

placed preverbally,[5] the D/F adverbials must be placed postverbally. The D/F adverbials are usually realized in NPs, e.g. *liangtian* (two days) (duration adverbial) and *lianghui* (two times) (frequency adverbial) even though some AdvPs or AdjPs can be found.[6] But the syntactic category of D/F adverbial does not affect the placement pattern; all the D/F adverbials tend to appear in a postverbal position. Compare (5), (6) and (7) with (8).

(5) 昨天打了半天電腦。

Zuotian da-le bantian diannao.

Yesterday type-ASP half-day computer.

"Yesterday (I) used the computer for a half day."

(6) 昨天打了三次電腦。

Zuotian da-le sanci diannao.

Yesterday type-ASP three-time computer.

"Yesterday (I) used the computer three times."

(7) 昨天打了很久電腦。

Zuotian da-le henjiu diannao.

Yesterday type-ASP very-long computer.

"Yesterday (I) used the computer for a very long time."

(8) *昨天半天/三次/很久打了電腦。

Zuotian bantian/sanci/henjiu da-le diannao.

Yesterday half-day/three-time/very long type-ASP computer.

"Yesterday (I) used the computer for a half day/three times/for a very long time."

The NP duration adverbial *bantian* (half-day) in (5), the NP frequency adverbial *sanci* (three-time) in (6), the AdvP or Advj duration adverbial *henjiu* (long-time) in (7) are all placed between the verb and the object. They are not allowed to be placed

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[5] They include AdvPs, like the manner adverbials *manmande* (slowly), NPs e.g. *mingtian* (tomorrow), and PPs e.g. *cong Xianggang* (from Hong Kong).

[6] *Henjiu* or *haojiu* (both means long time) are duration adverbials and are neither NP nor PP adverbials,

preverbally as in (8).

The hypothesis we draw from this analysis is that the learner may transfer the adverbial placement patterns in English and place the manner adverbials in both preverbal and postverbal positions. Preverbal manner adverbial placement can be resulted from positive transfer, which takes place when the learners transfer a structure from their L1 to the IL, and this structure is coincidentally available in the L2. In the case of the acquisition of Chinese adverbial placement, since preverbal adverbial placement is permissible in Chinese, the transfer of preverbal adverbial placement pattern from English to the Chinese-IL is a kind of positive transfer. However, postverbal placement of a number of Chinese adverbials, including the manner adverbials, in the IL probably results from negative transfer, which induces the learners to represent a structure in the IL grammar not allowable in the target language. (Ellis 1994) Note, nevertheless, that in fact, positive and negative transfer is a superimposed viewpoint towards transfer in SLA because supposedly, positive transfer could facilitate learning of the target language but negative transfer might cause learning difficulty and errors. But the process of both positive and negative transfer is in fact similar and the learners certainly do not distinguish the two types of transfer in the acquisitional process.

Because of positive transfer and/or the supply of positive evidence for preverbal adverbial placement in Chinese, the acquisition of preverbal adverbial placement supposedly poses no problem to the learners. But On the other hand, negative transfer might lead to generation of postverbal adverbial placement, the unlearning of which, nevertheless, could give rise to learnability problem. The input data only support preverbal adverbial placement but crucially there may not be direct negative evidence for the impossibility of postverbal adverbial placement.[7] This learnability problem parallels exactly that of acquisition of English adverbial placement by French learners.

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though whether they should be regarded as AdvPs or AdjPs is controversial.

[7] Direct negative evidence may in principle be available from many sources, for example, classroom instruction or corrections given by native speakers. But we do not know whether it is available to all learners or whether it is useful in resetting the parameter. See Schwartz (1993) for arguments against the usefulness of negative evidence for acquiring linguistic competence.

(See Section 1.2.1) The French learners transferred adverbial intervention from L1 French to L2 English and were unable to unlearn it even if they had acquired preverbal adverbial placement. For French learners, it has been argued that the resetting of the verb-raising parametric value determines whether the target structures can be acquired. (Pollock 1989) For English learners of Chinese, it is still not well-known what causes such a discrepancy between adverbial placement patterns in the two languages.[8]

The placement of Chinese D/F adverbials resemble their English counterparts in some respects. In English, the NP and PP D/F adverbials are placed in postverbal positions. Adverbial intervention between verb and object complement is never allowed. In Chinese, D/F adverbials can also be placed at post-object positions. But additionally, they can intervene between verb and object, of which English is strictly prohibited. As a result, the learnability problem seems to lie on the learning of D/F adverbial intervention.

If transfer takes place,[9] the English learners of Chinese might place the NP D/F adverbials in post-object positions, instead of between verb and object. The learnability problem is how the English learners get to know that the D/F adverbial intervention is possible. But what seems to be a learnability problem may not in fact be a problem at all. The input data of D/F adverbial intervention evidently suggests that it is one of the target structures. Consequently, the placement of D/F adverbials should not in fact constitute a learnability problem because positive evidence is available to inform the learners of this novel adverbial placement pattern.

However, Jin (1989) found that the English learners showed difficulties in acquiring the target D/F adverbial placement. One problem is that they overgeneralized the rule of preverbal placement. Once they realized that many adverbials occurred in the

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[8] See Section 3.2.1 for discussion of the relation between adverbial placement and basic word order.

[9] The transfer of post-object NP D/F adverbial placement from L1 English to the target language can be viewed as both a positive and negative transfer. It is regarded as a type of positive transfer because in Chinese, post-object adverbial placement is allowed. On the other hand, it is a type of negative transfer because not all Chinese D/F adverbials are placed in post-object positions; some of them are preferred between verb and object. See Section 2.2.3 for detailed discussion of the placement of different types of Chinese D/F adverbials.

preverbal positions, they also placed the D/F adverbials in preverbal positions.

If the learners overgeneralize the preverbal placement to all adverbials, learnability problem would arise because the learners may not automatically unlearn preverbal placement of D/F adverbials even after they discover the possibility of postverbal placement of D/F adverbials. The IL grammar then may allow both preverbal as well as postverbal placement of D/F adverbials. The learners may hypothesize that the D/F adverbials are similar to English AdvP adverbials, and can be placed in both preverbal and postverbal positions. If this does happen, the learnability problem is how the learners unlearn preverbal placement of D/F adverbials if negative evidence is not readily available.

Adverbial intervention in Chinese is a novel placement possibility that the learners must learn. Positive evidence is available. But Chinese observes strict adjacency in other instances. Except for the category of D/F adverbials, Chinese exhibits no intervention of any elements between verb and object. If the learners generalize the principle of strict adjacency, they may not allow adverbial intervention. However, positive evidence shows that in fact, strict adjacency can be violated in Chinese, but only under the condition that the inserted element is a D/F adverbial.

To summarize, there are two learnability problems in the acquisition of adverbial placement in Chinese by English speakers. First, if transfer takes place, the acquisition of placement of manner adverbials in Chinese should constitute a learnability problem because the learners may be unable to unlearn postverbal placement of manner adverbials. The placement of the D/F adverbials, on the contrary, should be learnable because positive evidence is available. However, Jin (1989) shows that the acquisition of D/F adverbial placement is more difficult.[10] As a result, what seems to be easy to acquire turns out to be more difficult.

1.4 IL problems predicted

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[10] It is difficult in the sense that in Jin (1989), the learners often overgenerate the rule of preverbal placement to all adverbials, and that in Li (1996), the learners sometimes place the D/F adverbials in post-object position. Positive evidence of adverbial intervention is available but it has not induced the learners to acquire the target placement patterns.

Based on the analysis of the previous sections, we hypothesize that the English learners of Chinese may have the following errors in adverbial placement. Different levels of learners may have different problems though.

1. Postverbal placement of manner adverbials

Transfer of L1 adverbial placement pattern might erroneously result in postverbal placement of manner adverbials. As English adverbials can be placed after the object, the learners may hypothesize that the Chinese adverbials can likewise be placed postverbally. This is found to be produced or accepted by learners of Chinese in Jin (1989) and Tong (1986).

(9) *他把小貓放在桌子上，然後去餐廳了很高興地。(Jin 1989, p. 195)

Ta ba xiao mao fang zai zhuozi shang, raohou qu canting-le hen gaoxing-de.

He ba small cat put on table up, then go restaurant-ASP very happily-ADV.

"He put the small cat on the table and then went to the restaurant very happily."

(10) *我們一定要工作很努力。 (Tong 1986 p. 193)

Woman yiding yao gongzuo hen nuli.

We must need work very industriously.

"We must work very industriously."

Manner adverbials in Chinese cannot be placed postverbally but in English, nearly all types of adverbials can reside in post-object positions. As mentioned in the previous section, if no direct negative evidence informs the learners of the impossibility of postverbal placement of manner adverbials in Chinese, the learners may be unable to recover from the generalization derived from L1 transfer.

2. Preverbal placement of the D/F adverbials

The non-target preverbal placement of D/F adverbials is widely observed in the Chinese ILs by Jin (1989) and Li (1996).

(11) *他三次去過台灣。 (Jin 1989, p. 195)

Ta sanci qu-guo Taiwan.

He three-times go-EXP Taiwan.

"He has been to Taiwan three times."

(12) *妻子在家半天等他，特別生氣。 (Li 1996 p. 184)

Qizi zai jia bantian deng ta, tebie shengqi.

Wife at home half-day wait him, very angry.

"His wife had been waiting for him at home for a half day and she got angry."

Preverbal placement of D/f adverbials is most probably due to overgeneralization of preverbal placement to all adverbials. Once the learners have noticed that apart from the manner adverbials, many other types of adverbials, including different syntactic categories of NPs, PPs and AdvPs, can be placed preverbally, they generalize the rule and also place the D/F adverbials in preverbal positions, even though no positive evidence instantiates such a placement possibility.[11] This also gives rise to a learnability problem since if no direct negative evidence informs the learners of the ungrammaticality of such a placement pattern, the learners may be unable to retreat from overgeneralization.

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[11] Note that definite D/F adverbials are likely to be placed preverbally. See the discussion in section 2.2.3. However, the placement of definite D/F adverbials in preverbal positions is generally accompanied by *dou*. For example,

(i) 他三天都來。

Ta santian dou lai.

He three-day dou come.

"He came on those three days."

(ii) *他三天來。

Ta santian lai.

He three-day come.

"He came on some three days."

Therefore, *dou* is an important hint that preverbal placement of D/F adverbials is distinct from their

3. Post-object placement of the D/F adverbials

Post-object placement of D/F adverbials is also a very common structure observed in the Chinese ILs by Li (1996), and is exemplified in (13) and (14) below. This can be brought about by L1 transfer, or based on the input data, the learners realize that the D/F adverbials could be placed postverbally. However, the learners might abide by strict adjacency and disallow D/F adverbial intervention in the IL.

(13) ??昨天下午我打網球兩個多小時。(Li 1996 p. 179)

Zuotian xiangwu wo da wangqiu liangge duo xiaoshi.

Yesterday afternoon I play tennis two more hour.

"I played tennis for more than two hours yesterday afternoon."

(14) ??因爲人很多，所以我們等公共汽車半個小時。(Li 1996 p. 179)

Yinwei ren hen duo, suoyi woman deng gonggong qiche bange xiaoshi.

Because people very many, therefore we wait public bus half hour.

"Because there were many people, we had been waiting the bus for half an hour."

Post-object placement of the D/F adverbials is not impossible but depends on the property of the NP complements. The more definite the complement is, the more acceptable the D/F adverbial is placed in post-object positions.[12] Thus, there is, in fact, positive evidence for post-object placement of D/F adverbials. What the learners may not notice, however, is the definiteness effects on D/F adverbial placement. (See Section 2.2.3 for discussion of definiteness effects) In the experiment about acquisition of Chinese adverbial placement, all the object complements are designed as generic NPs in the sentences with D/F adverbials and therefore, the most preferred adverbial placement pattern is in fact adverbial intervention. If the learners still consistently place the D/F adverbials in post-object position, they most likely do not take note of the definiteness effects (Section 2.2.3) and obey strict adjacency in Chinese.

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postverbal placement.

[12] See Fang (1993) for the discussion of the relation between adverbial placement and the property of the object.

4. Lack of distinction in the adjunction of the two types of adverbials to verb phrase

If the learners overgeneralize preverbal placement to all adverbials, they may not distinguish the adjunction order of the manner and D/F adverbials. In other words, they may adjoin them to the verb phrase without a sequence because they do not notice that the semantic content of an adverbial can affect its adjunction node. This hypothesis can be supported if the learner accepts both (15) and (16).

(15) *他高高興興地兩個小時踩了單車。

Ta gaogaoxingxing-de liangge xiaoshi cai-le danche.

He happy-ADV two hour ride-ASP bicycle.

"He rode bicycle happily for two hours."

(16) *他兩個小時高高興興地踩了單車。

Ta liangge xiaoshi gaogaoxingxing-de cai-le danche.

He two hour happy-ADV ride-ASP bicycle.

"He rode bicycle happily for two hours."

If the learners designate a fixed adjunction order to the D/F and the manner adverbial, they should only accept either (15) or (16), but not both, even though both of them are ungrammatical in Chinese. The acceptance of either (15) or (16) may signify an important representation of adverbial adjunction in the IL grammar.

The above hypothetical problems of Chinese adverbial placement may not arise in isolation. They most likely cluster together and thus, based on the problems a particular level of learners encounters, we are able to reconstruct their IL grammar. For example, postverbal placement of manner adverbials may co-occur with preverbal placement of D/F adverbials, most likely due to transfer of L1 grammar, and the overgeneralization of the input data. Another possibility is that if the learners do not know the definiteness effects in Chinese, they may accept both adverbial intervention and post-object placement of D/F adverbials, as both are instantiated in positive evidence.

In summary, by studying the problems of Chinese adverbial placement of different

levels of learners, we are able to trace the developmental path of their IL grammar. Some problems may be specific to a particular level of learners. Before we come to the details of the experiment about the acquisition of Chinese adverbial placement by English learners, we see some more linguistic facts about adverbial placement in English and Chinese. The next chapter is a comparative study of adverbial placement in English and Chinese and the examination of the related issues about adverbial placement. Chapter 3 presents the competing theoretical accounts for adverbial placement in English and Chinese. Chapter 4 describes how the experiment was designed and reports the results of the experiment. Chapter 5 discusses the results of the experiment, the major findings and the implications to SLA.

Chapter 2

A descriptive account of adverbial placement in English and Chinese

In this chapter, we investigate adverbial placement in English and Chinese. We look into the different placement possibilities and try to find out the similarities and differences of adverbial placement in the L1 English and L2 Chinese. Based on the linguistic facts, we postulate the factors affecting adverbial placement in the two languages.

Adverbials in this study are the phrases modifying the event, action, state or process expressed by the sentences. Syntactically, they are usually classified as adjuncts that are not subcategorized by the verbs. In other words, their status in the sentences is often peripheral. But in some instances, they may acquire the status of being obligatory elements that resemble complements in a sentence, though they are still not subcategorized. We will look at some examples of obligatory adverbials, which may serve as evidence that an adverbial may have different placement possibilities if it has different syntactic roles in a sentence. But since this study is mainly concerned with adjunctive adverbial placement, obligatory adverbials are only slightly addressed.

Adverbials can be classified into many types according to their semantic categories, syntactic categories and placement possibilities. In this thesis, however, only two semantic types of adverbials will be considered. The first type is the manner adverbials and the second is the D/F adverbials.[1] Both of them are usually categorized as the verb phrase (VP) adverbials since their scope of modification is confined to the VP only, but not to the whole sentence.[2] They are then assumed to be base-generated within the VP

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[1] Duration adverbial here means an adverbial encoding the duration of an event itself. It does not refer to the duration after the event has taken place. See Klein (1994) for the distinction of the two. Ma (1992) supplies a verb classification in accordance with whether they can accommodate a prolonged action.

[2] Jackendoff (1972) proposes two types of adverbs: Sentential adverbs and VP adverbs. They differ in their adverbial scope. Thomason and Stalnaker (1973) use different terminology: sentence modifier and predicate modifier, even though their semantic content is identical. Ernst (1984) defines VP adverbs as adverbs which specify some attribute of the verb's referent in a given domain. Sentence

shell.

The comparative study in this chapter is divided into two sections. The first is to investigate adverbial placement in English and the second is about adverbial placement in Chinese. In the end of each section, some relevant structures will be discussed in order to clarify some confounding issues. This helps to illuminate some related linguistic facts about adverbial placement which seem to contradict the patterns discussed before, but a closer examination of these facts makes clear that in fact they involve different structures and therefore, should not be collapsed with other adjunctive adverbials.

2.1 Adverbial placement in English

The manner adverbials, the duration adverbials and the frequency adverbials are three distinctive semantic categories. Syntactically, they can be realized as adverb phrases (AdvPs), noun phrases (NPs), prepositional phrases (PPs) or adverbial clauses. Only the distribution of phrasal categories will be considered in this study. In other words, adverbial clauses will not be taken into account in the rest of this paper.

2.1.1 The placement of the manner and D/F adverbials in English

The placement of manner adverbials will be investigated prior to the D/F adverbials. The manner adverbials can be realized as AdvPs, NPs and PPs though the AdvP manner adverbial is the most frequent syntactic category. AdvPs can generally be placed before or after the lexical verb,[3] as exemplified in (1) and (2). (See Bowers 1993)

(1) a. Michael quietly watches television.
    b. Michael watches television quietly.
(2) a. They can easily finish the tasks.

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adverbs are agent-oriented and mental attitude adverbs. However, he also maintains that it is difficult, though not impossible, to separate the VP adverbs from the sentence adverbs since many adverbs have overlapping functions.

[3] Some manner AdvPs may not be placed preverbally while some cannot occur postverbally. See the discussion in section 2.1.2.

b. They can finish the tasks easily.

As mentioned before, the manner adverbials can also be realized as NPs and PPs. But if they are realized in these two syntactic categories, they can only occur postverbally[4]. Look at examples (3) and (4) for illustration.

(3) a. Pete acted this character this way.
    b. * Pete this way acted this character.
(4) a. Stefan refused my offer in this manner.
    b. * Stefan in this manner refused my offer.

In (3), the NP manner adverbial, unlike the AdvPs, cannot be placed preverbally and similarly, in (4), the PP manner adverbial cannot be placed preverbally. In short, though the adverbials in (1) and (2), (3) and (4) are to describe the manner of the action, their distribution is different; the NP and PP manner adverbials can only be placed postverbally but the manner AdvP adverbials can be placed both preverbally and postverbally. This, as a result, indicates that the syntactic category of an adverbial affects its placement pattern in a sentence: AdvPs can be placed preverbally as well as postverbally but NPs and PPs can only be placed postverbally.

The placement of D/F adverbials further corroborates the principle that the syntactic category of an adverbial in question determines its placement pattern. Unlike the manner adverbials, the D/F adverbials are usually realized as NPs and PPs.[5] Consider examples (5), (6) and (7). (See Jackendoff 1972)

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[4] It is always possible for pre-subject parenthetical NP and PP adverbials to occur, especially when accompanied by the corresponding phonological properties, like stress and juncture. Nevertheless, this word order is more marked, as in (i):

(i) This way, Pete acted this character.
(ii) In this manner, Stefan refused my offer.

[5] In fact, not all D/F adverbials can be realized in all three syntactic categories. As far as I know, the duration adverbials can only be realized as PPs.

(5) a. Andrea frequently visited Angela.

b. Andrea visited Angela frequently.[6]

(6) a. Steve saw the movie three times.

b. * Steve three times saw the movie.

(7) a. Ida worked in that company for five years.

b. * Ida for five years worked in that company.

Frequently in (5) is an AdvP frequency adverbial and can occur in preverbal as well as postverbal positions. Once the frequency adverbial is realized as an NP as *three times* in (6), it can no longer occur in the preverbal position. This is also true about the PP duration adverbial *for five years* in (7); it cannot be placed preverbally.

Based on the above analysis, we can reach a generalization that the AdvP adverbials, regardless of the their semantic content, can usually occur preverbally as well as postverbally. The NP and PP adverbials, nevertheless, can only be placed postverbally. One reminder is that no adverbial can be placed between the lexical verb and the object complement. Compare (8) with (9). (See Pollock 1989, example (8) extracted from Bowers (1989) p. 609)

(8) * John spoke intimately French to Mary.

(9) John spoke intimately to a French person.

(8) is ungrammatical because strict adjacency between the verb and the object must be observed in English so as to facilitate Case assignment and satisfy Case

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[6] *Frequently* can be a VP as well as a sentential adverbial. Contrast *Frequently, someone got drunk* and *Someone got drunk frequently* (adopted from Thomason and Stalnaker 1973). The former means *From time to time, someone got drunk (say, in a bar)*. Here *someone* may be any person and *frequently* has a wider scope over the quantifier *someone*. The latter means *someone often got drunk*: *Someone* has a specific referent and has a wider scope over *frequently*. But it is noteworthy that this meaning difference is obtained only if the quantifier *someone* occurs together with the adverb *frequently* in the sentence. If *someone* changes to *Gary*, no meaning difference can be identified with the change of placement of *frequently*. See the discussion in Thomason and Stalnaker (1973).

requirements.[7] So long as there is another Case assigner like *to* in (9), which can assign structural Case to the object complement, can the adverbial be allowed to intervene between the verb and the complement.

We have seen the general pattern of adverbial placement in English. In the next section, we look at some exceptions and investigate the structures involved in those cases.

2.1.2 Some exceptions to the general patterns

There are, in fact, some exceptions to the above-mentioned patterns of adverbial placement. These exceptions may involve some semantic considerations of the adverbials in question or some syntactic constraints. Therefore, they should not be considered as the general pattern of adverbial placement in English.

First, not all AdvP adverbials can be placed preverbally as well as postverbally. AdvPs like *perfectly* cannot be placed preverbally (Bowers 1993) whereas *never* cannot be placed postverbally.

(10) a. He can speak Italian perfectly.
b. * He can perfectly speak Italian.
(11) a. James never plays football.
b. * James plays football never.

As shown in (10) and (11), *perfectly* must not be placed preverbally but on the contrary, *never* might not be placed postverbally. These idiosyncrasies in placement possibilities seem to hinge on the semantic content of individual adverbial item but the crucial semantic factors demand further investigation.

Another exception to the general adverbial placement patterns is that some adverbials are obligatory elements of the sentence and hence, occur in postverbal

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[7] According to Haegeman (1994), Stowell (1981) was the first proposer of strict adjacency between Case assigner e.g. the verb, and Case assignee e.g. the object, in English.

positions like other subcategorized complements.[8] (See McConnell-Ginet 1982)

(14) a. She drives fast.

b. He reads often.

Fast and *often* are obligatory adverbials of *drive* and *read* respectively. Without the adverbials, (14a) and (14b) are ungrammatical though the adverbials are not subcategorized by the verbs. Obligatory adverbials can only occur postverbally, like other obligatory verbal complements such as object complement.

To sum up, in spite of some exceptions, it is clear that there is a general pattern of adverbial placement in English. Adverbial placement in English is determined by the syntactic categories of the adverbials: AdvP adverbials can be placed preverbally as well as postverbally but NP and PP adverbials can only be placed postverbally.

2.2 Adverbial placement in Chinese

2.2.1 The placement of the manner and D/F adverbials in Chinese

While in English, adverbial placement seems to hinge on the syntactic category of the adverbial in concern, in Chinese the crucial criterion determining adverbial placement appears to be the semantic category of the adverbials. Let's look at the placement of manner adverbials first. The manner adverbials in Chinese realize as AdvPs.[9] Unlike their English counterparts, the Chinese manner AdvPs must be placed in preverbal positions. Examples (15) and (16) illustrate this fact.[10]

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[8] Huang (1988) maintains that 'a preverbal manner adjunct seems to necessarily refer to specific events, but a postverbal adverb can be generic: **He quickly runs, He runs quickly*; **He fast ran, He ran fast.*' Both of the two sentences in (14) also appear to express general properties.

[9] As far as we know, Chinese manner adverbials could only be realised as AdvPs, apart from adverbial clauses. Henceforth, Chinese manner adverbials refer to Chinese manner AdvP adverbials, but not others.

[10] (15b) and (16b) might be marginally acceptable if we consider the manner AdvPs as the right dislocated elements. (Guo 1992) This syntactic analysis of the sentences is probably sanctioned by the context and typically accompanied by the corresponding phonological properties like intonation and/or juncture.

(15) a. 他靜靜地看報紙。

Ta jingjing-de kan baozhi.

He quiet-ADV read newspaper.

"He is reading the newspaper quietly."

b. * 他看報紙靜靜地。

Ta kan baozhi jingjing-de.

He read newspaper quiet-ADV.

"He is reading newspaper quietly."

(16) a. 小琴高高興興地回家。

Xiaoqin gaogaoxingxing-de hui jia.

Xiaoqin happy-ADV come home.

"Xiaoqin came home happily."

b. * 小琴回家高高興興地。

Xiaoqin hui jia gaogaoxingxing-de.

Xiaoqin come home happy-ADV.

"Xiaoqin came home happily."

In (15) and (16), while *jingjing-de* and *gaogaoxingxing-de* can only be placed preverbally, the literal English glosses show that both *quietly* and *happily* can be placed postverbally. This unveils a difference between the placement of manner AdvPs in the two languages: the English manner AdvPs can be optionally placed preverbally and postverbally but the Chinese manner AdvPs are restricted to preverbal placement only. One discrete property that the two languages share is the strict prohibition of AdvP intervention between the verb and the object complement. Look at (17).

(17) *玲玲吃完了很快地糖菓。

Lingling chi wan-le hen kuai-de tangguo.

Lingling eat finish-ASP very quick-ADV candy.

"Lingling ate the candy very quickly."

The Chinese D/F adverbials, which are traditionally called the 'measure phrases of

verbs', exhibit two distinctive properties in distribution different from the manner adverbials. While the D/F adverbials are also VP adverbials, they are, unlike the manner AdvPs, not allowed to be placed preverbally. They can only occur in postverbal positions, either before or after the object complements, depending on the properties of the object complements. Therefore, it in turn implies that intervention of D/F adverbials between the lexical verb and the object complement is allowed in Chinese.[11,12,13]

(18) a. 我昨天打了半天網球。

Wo zuotian da-le bantian wangqiu.

I yesterday play-ASP half-day tennis.

"I played tennis for a half day yesterday."

b. 他打了五次電話，但還是打不通。

Ta da-le wuci dianhua, dan haishi da bu tong.

He call-ASP five-time telephone, but still call not through.

"He called five times but still could not get the line."

(19) a. 李老師教了小宗五年了。

Li laoshi jiao-le Xiaozong wunian le.

Li Mr/Ms teach-ASP Xiaozong five-year PART.

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[11] The effect of the properties of the object complements on adverbial placement will be discussed in section 2.2.3.

[12] Some intervening D/F adverbials like the one in (18a) can be reanalyzed with the object as a NP, especially with the addition of *de* as in (i).

(i) 我昨天打了半天的網球。

Wo zuotian da-le bantian de wangqiu.

I yesterday play-ASP half-day POSS tennis.

"I played tennis for a half day yesterday."

After reanalysis, the D/F phrase becomes part of the NP and seems to carry the adjectival function. (Huang 1982).

[13] (20a) and (20b) may be marginally acceptable in contrasting context, especially when the D/F adverbials are stressed. The D/F adverbials can be analyzed as the secondary topics and the function of this sentence pattern is to highlight the duration and frequency of the actions. However, this word order is marked and would seem odd if stands alone without a context.

"Mr/Ms Li has been teaching Xiaozong for five years.

b. 我看過這個字十次啦，但還是記不得怎麼寫。

Wo kan-guo zhei ge zi shici le, dan huishi ji bu de zenmo xie.

I see-EXP this CL word ten-time PART, but still remember not can how write (this word).

"I have seen this word ten times, but still cannot remember how to write it."

(20) a. * 我昨天半天打了網球。

Wo zuotian bantian da-le wangqiu.

I yesterday half-day play-ASP tennis.

"I played tennis for a half day yesterday."

b. * 他五次打了電話，但還是打不通。

Ta wuci da-le dianhua, dan haishi da bu tong.

He five-time call-ASP telephone, but still call not through.

"He called five times but still could not get the line."

(18) shows that the D/F adverbials *bantian* (half day) and *wuci* (five time) can intervene between the lexical verb and the object complement. (19), on the other hand, shows that the D/F adverbials *wunian* (five year) and *shici* (ten time) can also occur in post-object positions. Therefore, (18) and (19) clearly show that D/F adverbials can be placed postverbally, either before or after the object. But they almost cannot be placed before the verb as shown in (20).

As almost all the D/F adverbials are realized as NPs,[14] we might be tempted to draw the conclusion that the Chinese AdvP adverbials should be placed preverbally whereas the NP adverbials should be placed postverbally. However, if we take into

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[14] For D/F adverbials in AdvP or AdjP form, we can only bring up the duration phrases *hen jiu/hao jiu* (very long). Its placement resembles the D/F NP adverbials in every instance. (McCawley 1990) But since the non-NP D/F phrases do not constitute a significant subcategory in the D/F category, I ignore this category in the thesis. The pairing of distribution of NP and AdvP/AdjP D/F adverbials, however, further supports the claim that adverbial placement in Chinese depends on the semantic category, rather than the syntactic category of the adverbial concerned. This point will be discussed in detail later in this section.

account the placement of other Chinese adverbials, we can see that all other Chinese adverbials, be they AdvPs, NPs or PPs[15], should be placed preverbally. The following examples illustrate this word order fact in Chinese.

(21) a. 小張常常來我家。

Xiaozhang changchang lai wo jia.

Xiaozhang always come I home.

"Xiaozhang always comes to my home."

b. * 小張來我家常常。

Xiaozhang lai wo jia changchang.

Xiaozhang come I home always.

"Xiaozhang always comes to my home."

(22) a. 他明天來看我。

Ta mingtian lai kan wo.

He tomorrow come see I.

"He comes to see me tomorrow."

c. * 他來看我明天。

Ta lai kan wo mingtian.

He come see I tomorrow.

"He comes to see me tomorrow."

(23) a. 美寶在家裡看電視。

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[15] There appears to exist some exceptions to the principle of general preverbal placement of PPs, as exemplified in (i) below:

(i) 他睡在床上。

Ta shui zai chuang shang.

He sleep in bed up.

"He slept in bed."

The PP *zai chuang shang* in (i) occurs postverbally, unlike those in (23). But Li and Thompson (1981) points out that postverbal PPs are selected by the verbs and hence, are designated by the term 'complement'. Tang (1990) argues that postverbal PPs are complements of Pr, while preverbal PPs are modifiers.

Meibao zai jia li kan dianshi.

Meibao at home inside watch TV.

"Meibao watches TV at home."

d. *美寶看電視在家裡。

Meibao kan dianshi zai jia li.

Meibao watch TV at home inside.

"Meibao watches TV at home."

The overall preverbal placement of adverbials in different syntactic categories shows that only the specific adverbial categories of duration and frequency can be placed postverbally. This fact, then, leads us to the conclusion that adverbial placement in Chinese rests on the semantic category of the adverbial in question. The manner adverbials, together with many other types of adverbials like the sentential AdvP frequency adverbial in (21), temporal NP adverbial in (22) and locative PP adverbial in (23), are placed preverbally but only the D/F adverbials are placed postverbally. No other types of adverbials can be placed postverbally.

In summary, adverbial placement in English hinges on the syntactic category of the adverbials whereas adverbial placement in Chinese hinges on the semantic category. This discrepancy in adverbial placement in the two languages, then, is the 'gap' of linguistic knowledge that the English learners of Chinese should be aware of. In the next section, we will examine some more Chinese sentences which include some manner and D/F adverbials but which also involve different structures that should not be regarded as exceptions to adverbial placement patterns discussed in this section.

2.2.2 Further discussion of Chinese adverbial placement

In this section, we investigate a few structures containing a phrase similar to the adverbial phrase. On the surface, some of them are exceptions to the established adverbial placement patterns. However, on closer examination, they belong to different sentence structures and the seemingly adverbial phrases are not adjuncts, but complements or main predicates instead.

The first sentence type contains a phrase that looks like an adverbial but is in fact

'the predicative complement with *de*' (Li 1963). This sentence type can be further divided into two subtypes: the descriptive and the resultative expressions. They are exemplified in (24) and (25) respectively.

(24) 他跑得很快。

Ta bao-de hen kuai.

He run-de very quick.

"He runs quickly."

(25) 他跑得很累。

Ta bao-de hen lei.

He run-de very tired.

"He ran and so got tired."

In (24), *hen kuai* describes the manner of the verb *pao*. In (25), *hen lei* describes the state of subject resulted from the action *pao*. There is some argument over the syntactic category of these two phrases; they might be adverbial phrases or adjectival phrases. Both of these two phrases occur postverbally and hence, superficially, they may be exceptions to the preverbal placement pattern of the manner adverbials. However, they are in fact complements of the verbs with *de* instead of adjuncts in the sentences (Huang 1982, 1988, Li 1990, Tang 1990). In addition, the adverbial or adjectival phrase after *de* cannot take the *de* morphology (the two *de* are written in different Chinese characters and are totally unrelated semantically and syntactically), as other normal manner adverbs like *hen kuai de* (very fast) and *hen lei de* (very exhaustedly), which are exemplified in (26) and (27).

(26) *他跑得很快地。

Ta bao-de hen kuai de.

He run-de very quick-ADV.

"He runs quickly."

(27) *他跑得很累地。

Ta bao-de hen lei de.

He run-de very tired-ADV.

"He ran and so got tired."

Therefore, the predicative complement with *de* should not be considered together with the adjunctive manner adverbials.

On a par with the '*de* complement', there is another sentence type which may or may not carry *de* but its most distinctive feature is verb copying or verb reduplication. In this sentence type, all the manner and D/F phrases are placed in postverbal positions as in (28) and (29).[16]

(28) 他打球打得很好。

Ta da qiu da-de hen hao.

He play ball play-de very good.

"He is good at playing (foot)ball."

(29) 他打球打了一天。

Ta da qui da-le yitian.

He play ball play-ASP one-day.

"He played (foot)ball for a day."

Hen hao in (28) is again the manner phrase which modifies the VP *da qiu*. *Yitian* in (29)

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[16] The sentences containing descriptive expressions, either with or without verb reduplication like (24) and (28), often convey generic interpretations (Huang 1988, Ross 1984). This is the major difference in meaning between these sentences and those with preverbal manner adverbials, which, on the other hand, denotes specific events. (Huang 1988) Compare (24) with (i) below.

(i) 他很快地跑。

Ta hen kuai-de pao.

He very quick-ADV run.

"He ran very quickly."

(24) refers to the general property (running fast) of a person but (i) denotes a specific event where a person ran fast

is the duration phrase which specifies the duration of the action to take place. Both of them occur in postverbal positions after the second reduplicated verb. They, as in the simple '*de* complement' structure, serve as the obligatory element of the second verb. The first VP is considered as the domain adverbial while the second VP, together with the manner or D/F phrase, is considered as the main predicate. (Tang 1990)

Another sentence type also carries a domain adverbial but does not contain a '*de* complement' and verb reduplication. Their descriptive phrases must be placed postverbally though, as in (30).[17]

(30) a. 他罵人很兇。

Ta ma ren hen xiong.

He scold people very fierce.

"He scolds people fiercely."

b. 他走路很快。

Ta zuo lu hen kuai.

He walk road very fast.

"He walks fast."

This sentence type includes two clauses. The manner phrases *hen xiong* and *hen kuai* in (30a) and (30b) respectively are the main predicates whereas the VPs preceding the adverbials are the domain adverbials. Therefore, the manner phrases in this sentence structure are not adjuncts, but the main predicates instead. Consequently, the placement of these manner phrases at postverbal positions is not exception to the adjunctive

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[17] The sentence type of (30), like the sentences containing '*de* complements', denotes generic interpretation. As a result, aspect morpheme like *le* cannot be inserted into the sentence (Tai 1973):

(i) *他罵了人很兇。

Ta ma-le ren hen xiong 。

He scold-ASP people very fierce.

"He has scolded people fiercely."

adverbial placement discussed in Section 2.2.1.[18]

All of the sentences except the sentences resembling (29) discussed in this section will not be investigated in this study as the adverbial phrases are either complements or main predicates, but not adjuncts. The reasons to include the sentence type of (29) will be discussed in Section 4.2.2.

One point that should be noted is an alternative analysis of postverbal duration adverbials like *shinian* in (31).

(31) 他住在香港十年了。

Ta zhu zai Xianggang shinian le.

He live in Hongkong ten-year PART.

"He has been living in Hong Kong for ten years."

The structural analysis of (31) may resemble that of (30). In other words, the duration adverbial *shinian* may be construed as the main predicate even though the preceding VP should not be analyzed as the domain adverbial but as the sentential nominal. (Tang 1990) If this structural analysis is adopted, the whole sentence can be rewritten as (32).

(32) 他住在香港有十年了。

Ta zhu zai Xianggang you shinian le.

He live in Hongkong have ten-year PART.

"He has been living in Hong Kong for ten years."

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[18] Tai (1973) has discussed this sentence type but he uses PP phrases, instead of manner phrases, as in (i) (extracted from footnote 8 in Tai 1973):

(i) 切魚用刀子。

Qie yu yong daozi.

Cut fish use knife.

"(We) cut fish using knife."

He says *yong daozi* in (i) is the main predicate rather than an adverbial phrase.

With the addition of the verb *you* (existential *have*), the predicative status of the adverbial stands out more prominently. As a result, we come to the problem of two structural analyses of post-object duration phrases.[19] If the learners put the duration adverbial at the end of the sentence, it is not certain which structural analysis they adopt in their IL.[20] Likewise, if the learners place the manner adverbial in a sentence final position, it can be argued that the learners interpret the sentence as containing a domain adverbial and a predicate.

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[19] The similar structure with the frequency phrase cannot be analyzed in this way. In other words, it is intuitively impossible to conjure the post-object frequency phrase as the main predicate. In addition, as in (i), we cannot add *you* before the frequency phrase.

(i) *他去過美國有三次了。
Ta qu-guo Meiguo you sanci le.
He go-EXP America have three-time PART.
"He has been to America three times."

[20] This problem can in fact be partially resolved by adding some other elements like *cai* or a negator in the sentence to impede the structural analysis of sentential nominal and main predicate (Ernst 1997).

(i) a. 李四才住在香港三年。
Lisi cai zhu zai Xianggang sannian.
Lisi only live in Hongkong three-year.
"Lisi lived in Hongkong only for three years."

b. *李四才住在香港有三年。
Lisi cai zhu zai Xianggang you sannian.
Lisi only live in Hongkong have three-year.
"Lisi lived in Hongkong only for three years."

(ii) a. 李四沒有住在香港三年這麼久。
Lisi meiyou zhu zai Xianggang sannian zheme jiu.
Lisi not live in Hongkong three-year so long.
"Lisi has not lived in Hong Kong for as long as three years."

c. *李四沒有住在香港有三年這麼久。
Lisi meiyou zhu zai Xianggang you sannian zheme jiu.
Lisi not live in Hongkong have three-year so long.
"Lisi has not lived in Hong Kong for as long as three years."

There are a few measures which can help the learners clarify the status of an adverbial phrase in a sentence. First, avoid giving a sense of genericity in the sentences or in the pictures given to the learners. This can prevent the learners from analyzing the post-object adverbials as the main predicates like the sentence structure in (30). Second, make all the object complements generic in case the D/F adverbials appear in those sentences. This can make the intervention of adverbial between verb and object the most acceptable configuration.[21] Third, make all the manner adverbials end in *de*. This can help the learners identify the adjunctive property of the adverbials because if the adverbials are predicates or complements, they will not end in *de*.

In summary, this section reviews a few sentence types which contain a phrase resembling the manner or D/F adverbials in many ways but not being the adjunctive adverbials. These sentences once again are not the focus of this study. In the next section, we will look into in detail the definiteness effects in Chinese concerning D/F adverbial placement and this can complicate the whole picture we have discussed in this section and Section 2.2.1.

2.2.3 Definiteness effects in Chinese

It is well-known in the literature that the definiteness of a Chinese nominal can affect its position in a sentence. The most well-defined principle is the incompatibility of the indefinite NP in the subject position. *You* 'have' must, then, be present to introduce the indefinite NP when it appears as the subject.

The definiteness of nominals can affect the word order of a sentence and the effects are called the definiteness effects, which, however, are not restricted to arguments but can also affect the placement of adjuncts. The D/F adverbial is a category that is subject to the definiteness effects. (Xu 1995) Three placement patterns are related to the definiteness effects, namely, the pre-object and post-object placement of the D/F adverbials, the co-occurrence of the object complement and the D/F adverbials, and the preverbal or postverbal placement of the D/F adverbials.

As mentioned in the previous section, the D/F adverbials can occur before or after

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[21] This is the well-known definiteness effects in Chinese. It will be discussed in section 2.2.3.

the object complements and the crucial factor determining the actual placement of the D/F adverbials is the definiteness of the object complements. If the object complement is generic,[22] the D/F adverbial is likely to be placed before the object. By contrast, if the object complement is definite, the D/F adverbials is preferred to occur after the object.[23] This is especially true of the pronominals. (33) and (34) demonstrate this difference.

(33) a. 偉豪昨天說了三次大話。

Weihao zuotian shuo-le sanci dahua.

Weihao yesterday speak-ASP three-time lie.

"Weihao lied three times yesterday."

b. ??偉豪昨天說了大話三次。

Weihao zuotian shuo-le dahua sanci.

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[22] According to Chen (1987), generic nominal is one type of non-referential noun phrases which are realized in the following structural forms:

(i) bare noun phrase;

(ii) numeral + (classifier) + noun phrase;

(iii) "one" + (classifier) + noun phrase;

(iv) classifier + noun phrase.

[23] These two generalizations are concluded from the results of an experiment conducted by Fang (1993). Fang (1993) counted the frequency of occurrence of the two configurations, i.e. the object before the D/F adverbial and the object after the D/F adverbial, in books written by a few famous authors. He found that these two generalizations of the relationship between the definiteness of the object and adverbial placement are tenable. However, the major shortcoming of his statistical analysis is to align the structural forms of the objects, but not their semantic connotation, with their definiteness. As suggested in Chen (1987), the referentiality of a noun phrase cannot simply be reflected in the structural forms. Take the bare noun phrase as an example. The bare noun phrase can represent all different degrees of referentiality and the most crucial factor in determining the referentiality is in fact the context. Consequently, the frequency of co-occurrence of a particular adverbial placement and a particular structural form of a noun phrase cannot demonstrate unambiguously the relationship between the definiteness of object complements and adverbial placement. The statistical results in Fang (1993) also show that pre-object adverbial placement with bare noun phrases as objects accounts for about 54% of total occurrences and post-object adverbial placement accounts for about 46%. The difference seems to be insignificant.

Weihao yesterday speak-ASP lie three-time.

"Weihao lied three times yesterday."

(34) a. 玲玲昨天看了他一趟。

Lingling zuotian kan-le ta yitang.

Lingling yesterday see-ASP he one-time.

"Lingling visited him once yesterday."

c. *玲玲昨天看了一趟他。

Lingling zuotian kan-le yitang ta.

Lingling yesterday see-ASP one-time he.

"Lingling visited him once yesterday."

The contrast between (33) and (34) is distinctive. As long as the object complement is generic like *dahua* in (33), the D/F adverbial is preferred to be placed before the object complement. By contrast, if the object complement is definite like the pronominal *ta* in (34), the D/F adverbial has to appear after the object.

Though the rule discussed above about the relation between the definiteness of the object complement and its placement in relation to the D/F adverbial is borne out in many instances, there are exceptions in speech and writing that do not conform to this rule. Fang (1993) states that the relation between adverbial placement and the definiteness of object complements is still not yet adequately specified. In addition, the grammaticality judgment of these sentence structures may vary from person to person. However, the above-mentioned rule of adverbial placement can be used as a working principle in many instances.

If the object complement is indefinite, the D/F adverbial is not even allowed to co-occur with it postverbally, as shown in (35) and (36).

(35) a. ??小張看了一個病人三次。

Xiaozhang kan-le yige bingren sanci.

Xiaozhang see-ASP one patient three-time.

"Xiaozhang visited a patient three times."

b. *小張看了三次一個病人。

Xiaozhang kan-le sanci yige bingren.

Xiaozhang see-ASP three-time one patient.

"Xiaozhang visited a patient three times."

(36) a. *他騎了一匹馬一天。

Ta qi-le yipi ma yitian.

He ride-ASP one horse one-day.

"He rode a horse for a day."

c. *他騎了一天一匹馬。

Ta qi-le yitian yipi ma.

He ride-ASP one-day one horse.

"He rode a horse for a day."

In Chinese, the co-occurrence of two postverbal indefinite nominals is generally forbidden.[24] Fang (1993) argues that because the D/F phrase is used to count the duration or frequency of an action, an indefinite object, as part of the verb phrase being counted, makes the counting impossible to take place. Gu (1996), on the other hand, argues that an indefinite object confers a sense of terminativity on the event denoted by the sentence as a whole and the D/F adverbials, on the other hand, should be used only for those sentences denoting a process but not an event. Hence, the co-occurrence of two indefinite noun phrases will lead to semantic clash since on the one hand, the sentence with an indefinite referent as the object denotes a finished event, and on the other hand, the sentence should denote a non-terminated process which can be imposed a terminativity by adding in the D/F adverbials. This semantic incompatibility would lead to the ungrammaticality of the sentence with both an indefinite object complement

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[24] This principle is not applicable to the co-occurrence of two postverbal complements in dative structure like (i).

(i) 小璐送給了一個朋友一部車。

Xiaolu songgei-le yige pengyou yibu che.

Xiaolu give-ASP one friend one car.

"Xiaolu gave a friend a car."

and D/F adverbial.

The third property of the definiteness effects is the obligatory preverbal occurrence of the definite D/F adverbials. Compare (37) and (38).[25]

(37) a. 他這三次沒來香港。

Ta zhei sanci mei lai Xianggang.

He these three-time not come Hongkong.

"He did not come to Hong Kong these three times."

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[25] The impossibility of postverbal occurrence of definite D/F adverbials withholds only when the adverbial is an adjunct. If it is an obligatory adverbial, there is no such a restriction, as in (i) below:

(i) 他只玩了那三次，就不玩了。

Ta zhi wan-le nei sanci, jiu bu wan le.

He only play-ASP those three-time, then not play PART.

"He had played those three times and then did not play again."

See also the examples given in Li (1980) about the placement of definite D/F adverbials between the verb and the object. It seems to me that the examples are a bit archaic, which, as a result, may account for the historical change of the placement of the definite D/F adverbials. (Li and Thompson 1975)

Xu (1995) illustrates definite adverbial intervention in (ii) and (iii), but he says the seemingly definite adverbials are not interpreted as definites.

(ii) 他開了這些日子車，有經驗了。

Ta kai-le zhexie rizi che, you jingyan le.

He drive these day car, have experience ASP.

"Having driven a car for so many days, he has experience."

(iii) 他參加了那三次會議，見了世面。

Ta canjia-le na san ci huiyi, jian-le shimian.

He attend those three time meeting, see world.

"He attended those three meetings and saw the world."

Note that definite adverbial intervention is not generally accepted in many instances, even though we still do not know under what conditions it can be used. One condition that seems to be certain is when a definite adverbial intervenes between verb and complement, a clause must follow for further elaboration. (ii) and (iii) would seem odd if the second clause in each sentence is deleted.

b. *他沒來香港這三次。

Ta mei lai Xianggang zhei sanci.

He not come Hongkong these three-time.

"He did not come to Hong Kong these three times."

(38) a. 小周那三天都釣魚。

Xiaozhou nei santian dou diaoyu.

Xiaozhou those three-day dou fishing.

"Xiaozhou went fishing for those three days."

b *小周釣了那三天魚。

Xiaozhou diao-le nei santian yu.

Xiaozhou fish-ASP those three-day fish.

"Xiaozhou was fishing for those three days.'

The D/F adverbial need not take on the demonstrative *zhei* or *nei* before becoming definite. The D/F adverbial can appear in bare form and its preverbal or postverbal placement confers its (in)definiteness. Preverbal placement usually comes with the quantifier *dou*. According to Li and Thompson (1981), *dou* can refer only to a preceding noun phrase, which is generally the topic or the subject. If this analysis is correct, then *santian* in (38) is most likely a topic. We will not pursue the pragmatic category of preverbal definite D/F adverbials further.

This phenomenon is consistent with the general principle in Chinese that definite noun phrases are likely to be placed before the verbs, which, however, brings up the question that whether all the D/F adverbials are base-generated in either preverbal or postverbal position and the definiteness effects take effect later on to derive the surface configuration, or the definite and indefinite D/F adverbials are base-generated in different slots. Tang (1990) adopts the latter mechanism and proposes that the definite D/F adverbials are base-generated under the Predicate Phrase (PredP), which is on a higher structural level than VP. The indefinite D/F adverbials, on the other hand, are base-generated under VP.

In summary, the definiteness effects shed light on three properties of D/F adverbial placement in Chinese. First, the definiteness effects determine whether the adverbials

should be placed before or after the object complements. Second, they prohibit the co-occurrence of indefinite object complements with indefinite adverbials. Third, they prepose the definite adverbials to preverbal positions. In order not to complicate the whole picture and bring in too many variables, we will not investigate the definiteness effects in the experiment. Thus, the object complements of the sentences in the experiment will all be made generic, which then makes D/F adverbial intervention between verb and object the most acceptable syntactic configuration. Moreover, all the D/F adverbials are non-definite, hence unacceptable in preverbal positions. But in examining the results of the experiment, we still take into consideration the possible influence of the definiteness effects on the acquisition of adverbial placement.

In this chapter, we have discussed the adverbial placement patterns in English and Chinese and examined the principles behind the surface placement patterns. We have also looked into some related sentence structures and concluded that they involve different structures and should not be considered as exceptions to the established principles of adjunctive adverbial placement. In order to reduce the number of variables, many of the related structures will not be included in the experiment. In the next chapter, the linguistic accounts concerning adverbial placement will be discussed and based on those accounts, we would know what grammatical principles the English speakers should internalize in order to acquire adverbial placement in Chinese.

Chapter 3

Theoretical accounts for adverbial placement

In this chapter, we will look into some theoretical accounts for adverbial placement in English and Chinese. Many accounts are developed in the generative grammar which aims to achieve not only descriptive but also explanatory adequacy. These accounts show that the underlying Chinese and English grammar generating the respective adverbial placement patterns in the two languages differ in various aspects. This gives rise to the learnability problems discussed in Section 1.3. The experiment to test whether the English learners succeed in learning Chinese adverbial placement will be discussed in the next chapter.

Section 3.1 discusses the accounts for English adverbial placement. In Section 3.2, we will turn to the Chinese accounts and finally, in Section 3.3, we will compare and contrast the factors affecting adverbial placement in the two languages. These factors are important to the design of the experiment and the discussion of the results of the experiment.

3.1 The accounts for English adverbial placement[1]

This section is divided into two subsections. The first subsection is about placement of AdvP adverbials and the second is on placement of NP and PP adverbials. This division is based on the syntactic categories of the adverbials in question. More importantly, there is no single full-fledged account accommodating all the facts of English adverbial placement. The available accounts, typically, center on one or two of the three types of adverbials.

3.1.1 The placement of English AdvP adverbials

As far as we know, there is not an account which is able to account for all the facts of AdvP placement discussed in the previous chapter. Two accounts, Pollock (1989)

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[1] The accounts discussed in this chapter have taken the linguistic perspectives e.g. syntax, semantics or the interface of the two. The cognitive accounts for adverbial placement will not be discussed. See Nakamura (1997).

and Bowers (1993), however, have addressed English AdvP adverbial placement in an indirect manner. The main concern of the former is the parametric variation of verb raising in English and French and in the latter, it is proposed that only the projection of Predicate Phrase (PredP) can account for many of the unresolved linguistic facts, including the peculiar placement patterns of some English AdvPs. Though both accounts are unable to account for all the linguistic facts of AdvP placement, they can, to some extent, shed light on the general placement pattern of AdvPs and additionally, the possible transformation they may undergo in order to derive their surface placement pattern. Moreover, they have inspired some Chinese accounts on adverbial placement. (Li 1990, Tang 1990, Huang 1992)

3.1.1.1 Pollock (1989)

This study attempts to attribute a number of observed syntactic differences between English and French to one parametric variation: presence or absence of verb raising. AdvP placement is one of many differences in English and French grammar as shown in (1) (adopted from Pollock 1989 p. 367).

(1) a. John <u>often</u> kisses Mary.
b. *Jean <u>souvent</u> embrasse Marie.
Jean often kisses Marie.
c. *John kisses <u>often</u> Mary.
d. Jean embrasse <u>souvent</u> Marie.
Jean kisses often Marie.

Preverbal placement of the frequency AdvP *often* is allowed in English (1a) but not in French (1b). By contrast, AdvP intervention between verb and object complement is permitted in French (1d) but not in English (1c). This syntactic difference, according to Pollock, does not impute to different D-Structure in generating different surface configuration. Pollock assumes the equivalent D-Structure for the two languages as in (2) (p. 366).

(2) $[_{IP}$ NP I $([_{Neg}$ not/pas$])$ $[_{VP}$ (Adv) V...$]]$

AdvPs are assumed to be base-generated preverbally in both languages. The observed intervention of AdvPs in French is derived by (lexical) verb raising to I. Verb raising means the verb passes by the Adv and the negator *pas*, if there is any, to I[2]. After verb raising, the verb can acquire its agreement and tense morphology. This syntactic operation is obligatory because first, the agreement and tense morphology are bound morphemes and thus, cannot be stranded in S-Structure. Second, I is an operator which must bind some variable, or it will lead to vacuous quantification. Verb raising can save the whole configuration by first allowing the verb to acquire the bound morphemes on the way to I, and then leaving traces after movement so as to satisfy the Quantification Theory. The syntactic configuration after verb raising is what we observe at S-Structure; the AdvP intervenes between the verb and the object complement.

The whole process of verb raising, however, does not occur in English. According to Pollock, this imputes to 'opacity' of Agreement in English. Compared with French, English is 'weaker' in agreement morphology. This then creates the opaque context where the θ-grid cannot be transmitted from the raised verb to the trace. If the English verb raises as it does in French, the object complement will not be able to receive the θ-role because the lexical verb is not 'sufficiently close' to assign the θ-role. The trace, on the other hand, is not able to assign the θ-role if the θ-grid is not transmitted from the lexical verb. The consequence is a violation of the θ-criterion.[3]

In order to satisfy the θ-criterion, the last resort is to make the lexical verb not

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[2] I can be split into TP (Tense Phrase) and AgrP (Agreement Phrase) because short verb movement is observed in the French infinitives. The lexical verb then can raise to TP through AgrP, leaving a trace in the latter. (See Pollock 1989)

[3] The relationship between verb raising, together with the associated syntactic configurations, and morphology is in fact not empirically supported by many languages, though the theory of verb raising is widely used in linguistic literature. Italian has rich morphology and allows adverbial intervention, but the negator *non* always precedes the verb. The lexical verb also does not move before the subject in question formation. Therefore, the strength of morphology might not be concomitant with the purported surface structures.

move in the first place. It is the tense and agreement morphemes, however, that hop down and affix to the lexical verb so as to manifest the observed surface structure. The illegitimate chain created by affix hopping may be eliminated at PF or LF.

If the English verb does not move, the AdvP will still reside in preverbal position in S-Structure as it does in D-Structure. This explains why English AdvPs can only be placed preverbally but French AdvPs must be placed between verb and object.

Pollock's account can explain the impossibility of AdvP intervention in English. However, it cannot explain why some AdvPs must be placed preverbally whereas some others postverbally. (See Section 2.1.2) If preverbal base-generation of all AdvPs is assumed, their postverbal occurrence require some stipulation. In addition, it is obvious that not all AdvPs can occur preverbally. An explanation is then required to account for the controversial cases that some AdvPs cannot occur in the preverbal base-generated slot.[4]

To conclude, Pollock (1989) seems adequate enough to account for the major differences between English and French with respect to AdvP placement. English AdvPs are preverbal because the verb cannot move in an opaque context. Verb movement in French is obligatory because of the transparency of Agreement in French and the requirement to satisfy the Quantificational Theory. However, this account cannot explain the placement of all AdvPs in English, especially those of which are not allowed to be placed preverbally. Consequently, we need some other accounts for these cases.

3.1.1.2 Bowers (1993)

The problem of the impossibility of preverbal placement of some AdvPs is reexamined in Bowers (1993). He advocates the projection of an additional functional category between IP and VP, namely the Predicate Phrase (PredP).

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[4] Pollock suggests the possibility of post-object base-generation of some French AdvPs. He proposes scrambling of the object NPs so as to make the AdvPs intervene between the verb and the object. However, he does not stipulate the conditions for post-object base-generation of French verbs, or say anything about this possibility in English.

The projection of a new functional level is inspired by the inadequacy of the existing phrase structure in analyzing Small Clauses, but the theoretical and empirical implications for instantiating such a new level go far beyond Small Clauses.[5] As argued in Bower (1993), the PredP is projected not solely to accommodate Small Clauses. It in fact is projected even if the argument structure (e.g. the subject) is not available.[6] Therefore, Bowers intends to integrate PredP into the X'-phrase structure. He supports the proposal with much empirical evidence including the placement of AdvPs.

Bowers (1993) adopts Travis' (1988) theories on AdvP placement and hypothesizes that adverbs are licensed by heads, but evidently some adverbs cannot be licensed by the licensing heads identified so far. He calls this group of adverbs the *perfectly*-type of adverbs. ((3) is adopted from Bowers 1993 p.606)

(3) a. John learned French perfectly.
    b. *John perfectly learned French.
(4) a. John can learn French perfectly quickly.[7]
    b. *John can learn French quickly perfectly.

It is generally assumed that the manner AdvPs are VP adverbs and are base-generated in preverbal positions. (3a&b), however, shows that *perfectly* cannot occur in the preverbal position. (4a&b), additionally, shows that *perfectly* cannot occur after

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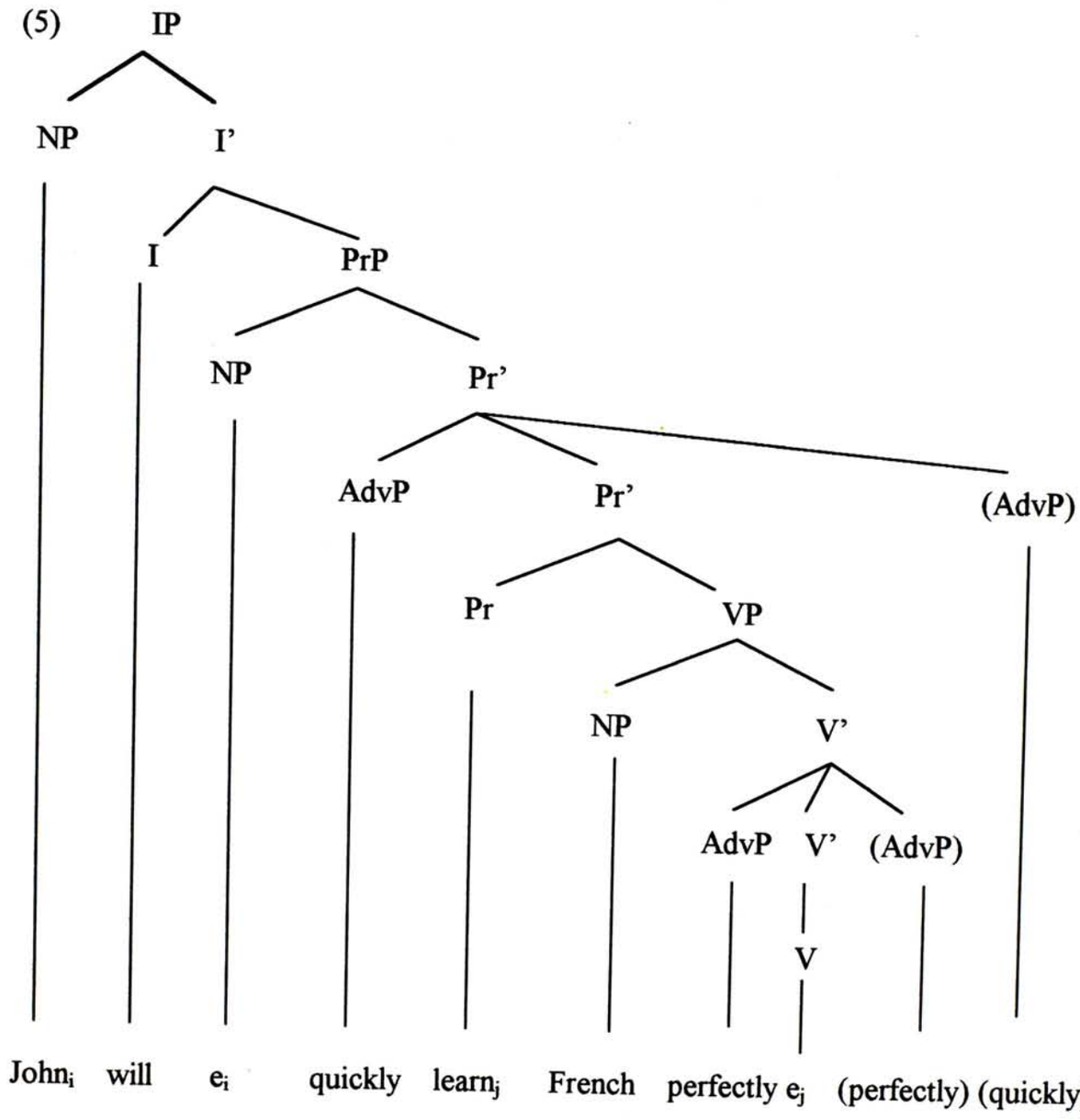
[5] Small Clauses pose a problem to the linguists because first, the maximal projection SC cannot be found in other configurations in the UG framework. Second, the head of SC is unknown and it cannot be a V, a P or a A because these syntactic categories cannot be projected to SC. Third, it does not conform to the X'-theory since other functional categories project two bar levels but SC has only one. Bowers' major concern is then to reduce the idiosyncrasy of instantiating a non-conforming functional level and to attempt to annex SC into the UG framework and the X'-theory.

[6] Bowers also gives semantic evidence for the instantiation of PredP and he argues that its projection maps with a possible semantic interpretation. The semantic arguments for the projection of PredP will be discussed in this section, and they are also relevant to the semantics of AdvP adverbials.

[7] (4a) may not be a good example to illustrate the co-occurrence property of *perfectly* and *quickly*, because *perfectly* in (4a) could be an intensifier to *quickly*, so that (4a) does not consist of two, but one, manner adverbs. Only a giant pause, though less probable, between *perfectly* and *quickly* can indicate their parallel modifying relationship to the VP in (4a).

quickly even though both of them are assumed to be VP adverbs.[8] This peculiar placement properties of the *perfectly*-type of adverbs serves to support the argument that some adverbs are licensed by a head that has not been identified by the syntactic accounts presented so far. According to Bowers, a new category PredP should be projected between IP and VP. The new syntactic configuration with the projection of this novel category is diagrammed in (5) (Bowers 1993 p. 609).

(5)



[8] Huang (1975) gives a semantic account for adverbial placement. Preverbal AdvPs denote both the manner of an action and the subject's state of mind. Postverbal AdvPs encode only the former but not the latter. He also notices that a shift of placement position could result in a change of the meaning of an AdvP. See Ernst (1984) for a more thorough discussion of the semantics of adverbs.

A few points need to be stipulated. First, the object complement *French* occupies the Spec position of the VP and structural Case and θ-role assignment are now unified into a Spec-head relation. Second, unlike Larson (1988), the adverbials are not projected to be the innermost complement but rather the X'-adjuncts. Third, verb raising from V to Pr is obligatory. The motivation for verb raising is to assign θ-role and nominative Case to the subject, which resides in the Spec of PredP, and structural Case and θ-role can only be assigned locally. Fourth, *quickly* is licensed by Pr, head of the PredP, while *perfectly* is licensed by V. Adverbs can be adjoined to the left of the head as left Pr'/V' adjuncts or to the right as right Pr'/V' adjuncts. The occurrence of *perfectly* in surface structure will not be affected by different ways of adjunction after verb raising and it must be postverbal in surface structure. By contrast, *quickly* can be placed preverbally as well as postverbally in surface syntax, depending on the slot *quickly* to be adjoined. Finally, this type of adjunction cannot cross paths. In other words, an AdvP licensed by the head of a maximal projection cannot move to another maximal projection. That is the reason why *quickly* and *perfectly* cannot alternate their postverbal positions in surface structure.[9]

This syntactic configuration is supplemented by a semantic account. (Bowers 1993) The PredP is called a complete functional complex (CFC), 'meaning that it can stand on its own as a complete "thought," or "information unit"' (p. 649). A transitive VP, in contrast, is not a CFC because it denotes a property instead of a proposition. A property does not carry any truth values. Only after the predication of a propositional function can a property transfer to a proposition with truth values. The function of Pr, then, is a predication operation to map property expressions onto propositional

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[9] If we borrow Bower's (1993) theory of adverbial placement to analyze D/F adverbial placement, the English NP and PP adverbials are PredP adverbials, but not VP adverbials, because only PredP adverbials can be placed postverbally. However, Bowers (1993) has not spelt out the possibility to analyze D/F adverbial adjunction in this manner. If the English D/F adverbials are PredP adverbials, the learnability problem is not only the mechanical facts of adverbial placement, but also the slot where D/F adverbial should be adjoined to. It is because Chinese D/F adverbials are adjoined to VP but English PP and NP D/F adverbials are adjoined to PredP. See Section 3.2.2.3 for Tang's (1990)

functions of type. This semantic evidence thus supports the projection of the PredP.

This account demarcates two types of so-called VP AdvPs by additionally projecting a new functional category to license one type of AdvPs. Since these two types of AdvPs are projected in different maximal projections, they manifest distinct syntactic properties, i.e. placement in this case. Genuine VP AdvPs can only be placed postverbally in surface structure but PredP AdvPs can be placed either preverbally or postverbally. However, the problem arouses in this analysis is how the two types of AdvPs are separated semantically. In other words, the criteria based on which an AdvP is categorized as a PredP AdvP modifying the whole proposition and another AdvP is categorized as a VP AdvP modifying the property are not clear. Bowers has given an example to illustrate the delineation of the two kinds of AdvPs. He argues that the Pr-licensed adverbs in preverbal position is subject-oriented. For example, (6) means 'it was stupid of John to learn French':

(6) John stupidly learned French.

A V-licensed adverb in postverbal position can only refer to the manner of the action like the stupid manner in describing 'John learned French' in (7).

(7) John learned French stupidly.

Bowers' semantic analysis of preverbal and postverbal adverbs can in fact be traced back to Thomason and Stalnaker (1973) and McConnell-Ginet (1982). Thomason and Stalnaker (1973) quote an example (p. 200) to explain the difference between preverbal and postverbal adverbs:

(8) a. He slowly tested all the bulbs.
    b. He tested all the bulbs slowly.

The truth conditions of (8a) and (8b) are different. (8a) would be true if *he* took a long

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discussion of Chinese D/F adverbial placement.

coffee break between each testing, even though *he* tested each single bulb quickly. In (8b), *he* must test each bulb in a slow pace even though *he* might test all the bulbs quickly. But notice that the meaning difference can only be discerned when a quantifier and an adverb turn up in the same sentence and thus, their relative scopal relation creates the variations in interpretation. In case the quantifier is absent, e.g. suppose *all* in (8) is deleted, the different interpretations with respect to different placement of the AdvP are indiscernible.[10] Thus, preverbal and postverbal placement of adverbs may affect the meaning of the sentence as a whole but meaning difference is not guaranteed in every instance. As a result, we can conclude that there may be some semantic reasons that prevent some adverbials from occurring before the verb (licensed by Pr in Bowers' framework) but the determining factors are not well-defined.

Whether it is cognitively real that preverbal and postverbal placement of an adverbial will lead to a difference in meaning requires careful experimental study. But even if the difference in meaning is valid, we still need a more precise semantic account to delineate these two types of AdvPs. Two questions need to be addressed: 1) What are the semantic properties of the adverbial that allow it to match with a particular licensing head? 2) What makes an AdvP plausibly licensed by both Pr and V? These two questions must be resolved before the relationship between heads and adverbials, and the effect of this licensing relation on adverbial placement are fully understood.

Another inadequacy of this account is that other types of adverbials are left out of discussion. Bowers only touches on the placement of AdvPs but nothing is mentioned about the placement of NP and PP adverbials. Are they also base-generated in preverbal position? Are they also subject to preverbal and postverbal adjunction as AdvPs? Are they also X'-adjuncts?

In summary, Bowers (1993) is able to account for a wide range of linguistic facts concerning AdvP placement. If a AdvP, like *perfectly*, is licensed by V, it must be placed in postverbal position in surface syntax. If a AdvP, like *quickly*, is licensed by Pr, it should be able to alternate its placement in preverbal as well as postverbal position. The major shortcomings of this accounts are two. First, it does not give sufficient

[10] Ernst (1984) notices that only postverbal adverbs, but not preverbal adverbs, can be stressed.

semantic details to characterize an AdvP as a VP or a PredP adjunct. Second, it does not mention anything about the placement of other NP and PP adverbials.

In the next section, some accounts concerning NP and PP adverbials will be discussed. However, the major focus of these accounts is not adverbial placement, but Case assignment to NP adverbials.

3.1.2 The placement of English NP and PP adverbials

The accounts discussed in this section do not directly address the placement of NP and PP adverbials. Instead, they address the issue of Case assignment to NP adverbials because it is nonetheless innocuous where the Case of NP adverbials comes from. For example,

(9) I went to church that morning.

That morning is a NP temporal adverbial but it cannot receive Case from the verb *go* since it is not subcategorized by *go*. Therefore, the question is how it can get its Case.

Bresnan and Grimshaw (1978) proposes a P-deletion rule by examining the syntax of free relatives like *where(ver)* and *when(ever)* in English. The rule states that P [+F] ->ϕ /__NP [+F], where F=[Loc]or [Temp], which implies that NP adverbials are in fact PP adverbials. As long as both the preposition and the NP in a PP adverbial carries the same F feature, the preposition is deleted to create a bare NP phrase in the surface structure.[11] Many adverbials and components of adverbials are supposed to carry the [+F] features, among the examples are *week*, *Monday*, *date*, *hour*, *time*, *decade*, *yesterday*, and the free relatives. If this account is adopted, no real NP adverbials seem to be available in English because all surface NP adverbials were originally PP and have in fact been subject to the P-deletion rule. McCawley (1988) also adopts this account.

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[11] Many details are not specified in this account. For example, why is the P-deletion rule an obligatory syntactic operation ? At what level does deletion take place? How to determine whether a NP carries an F feature?

See also Emonds (1987) for the discussion of the Invisible Category Principle.[12]

On the other hand, Larson (1985) suggests that 'a certain feature borne by a limited class of nouns be analyzed as assigning abstract Oblique Case. The result is that certain NPs have the capacity to receive Case and thematic role (θ-role) through the lexical properties of their own heads.' (p. 595) He agrees that some nouns may carry the [+F] features but denies the deletion of P in the light of these [+F] features. He, on the other hand, argues that the nouns with [+F] features can assign Oblique Case to the NPs that dominate them. Therefore, the NPs can be self-sufficient in the sense that they can occur in a linguistic environment where apparent Case assigners are absent.

Note also that Larson (1988) posits that adverbials are the innermost complement sister to V. If this is the case, it may be V which assigns Case to the adverbials. Larson does not mention Case assignment to NP adverbials in his paper but this account also raises the problem of the type of Case to be assigned to the adverbials. Bowers (1993) posits that adverbials are X'-adjuncts. The Case problem is, once again, not addressed but it can be argued that the X' complex compositionally assigns Case to the adverbials.

Since this study is not about Case assignment to NP adverbials, further discussion of this problem will not be pursued. Summarizing, no account can adequately explain why the AdvPs can be placed preverbally as well as postverbally whereas the NP and PP adverbials can only be placed postverbally. Suffice it to say that this is not related to the Case problem because PP does not need Case in both preverbal and postverbal positions but NP needs Case in either preverbal or postverbal positions. The empirical evidence, however, suggests that these two categories exhibit the same distributional patterns, in contrast to the placement pattern of AdvP adverbials. If NP adverbials were indeed PP adverbials as suggested by Bresnan and Grimshaw (1978) and McCawley (1988), there would only be one syntactic category of adverbials which must be placed

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[12] Emonds (1987) proposes that *ly* adverbs are reductions of indefinite bare-NP adverbs whose head is a phonologically unrealized alternate of *way*, which in turn implies that adverbs originate from PPs.

McCawley (1988), however, argues against this account because he maintains that the surface head of the adverb should be the adverb itself, but not the underlying P. Emonds' (1987) account also raises the problem that some PPs could be placed preverbally and postverbally but some could not. I do not adopt Emonds (1987) in this thesis.

postverbally in English, namely the PP adverbials.

The Case problem is also applicable in Chinese, which may pose some problems to the English speakers in learning the placement of D/F adverbials. See the discussion in section 3.2.1.2.

To conclude, there is no single account which can account for all the facts of adverbial placement in English. Pollock (1989) and Bowers (1993) can only resolve some of the problems of AdvP adverbial placement. These two accounts, however, do not take into consideration the placement of NP and PP adverbials. Other accounts touch on NP and PP adverbials but their major focus centers around Case assignment to NP adverbials. All in all, there lacks a full-fledged account which accommodates all the English adverbials and their respective placement possibilities.

3.2 The accounts for Chinese adverbial placement

Researchers for Chinese adverbial placement generally divide Chinese adverbials into two types. The first is preverbal adverbials and the second is postverbal adverbials. This division inadvertently singles out one semantic adverbial category, that is, D/F adverbials, from the others. Preverbal adverbials include all types of adverbials except D/F adverbials. The locative adverbials, the temporal adverbials, the causal adverbials, and the manner adverbials all belong to the preverbal type. The postverbal adverbials include only one type which is the D/F adverbials. (See section 2.2.2 in chapter 2 for the discussion of some other postverbal adverbial phrases.) In the following subsections, we also divide adverbials into preverbal and postverbal ones for discussion. Among the preverbal adverbials, special attention will be given to the manner adverbials.

3.2.1 The placement of Chinese manner adverbials

There are two approaches to account for the placement of Chinese manner adverbials. The first one attributes word order difference to meaning difference and the second one attributes word order difference to the typological variation of the order of modifee and modifier. The former account is proposed by Light (1979) and Tai (1985) and it is argued that word order can affect the semantic interpretation of a sentence and 'the relative word order between two syntactic units is determined by the temporal

order of the states which they represent in the conceptual world' (Tai 1985 p. 50). The relative orders of adverbial and verb are also assumed to be associated with different temporal sequence of states. However, since it is well-known that adverbials can be placed in various places in a sentence in different languages and it is hard to conceive that the different adverbial placement patterns are a reflection of different temporal states, this account can hardly be maintained.

The second account correlates adverbial placement with word order typology. Typological studies attempt to find out how different the world's languages can be and in turn search for regularities in the ways that languages vary, and the constraints and principles that underlie this variation. Word order typology is one type of typological study that tries to characterize the world's languages according to the observed word order differences. A number of language types have been captured on the basis of word order typology and they are classified as SOV, SVO and VSO languages, to mention the three commonest ones. Based on the language type a language belongs to, it is assumed that some word order facts could be deduced.

The classification of a language to a word order language type sometimes presents a problem. As for Chinese, some argue for SVO and others for SOV as the basic word order. In this section, some background about language typology and the argument about Chinese as a SVO or SOV language will be given. Then we see why the language type of Chinese is important for the rationalization of the overall preverbal adverbial placement in Chinese.

The typological word order was first made known by Greenberg's famous paper "Some Universals of Grammar with Particular Reference to the Order of Meaningful Elements" (1963). This paper aims to set up some Implicational Universals, which take the form "given *x* in a particular language, we always find *y*", but not conversely. In other words, the existence of *x* in a language implies the existence of *y*, but the non-existence of *x* implies nothing about *y*. Greenberg studied 30 sample languages and discovers three basic word order patterns, namely VSO, SVO and SOV. Based on these three basic word order types and other word order facts in the sample and other languages, he postulated 45 implicational universals about word order in languages. Out of these 45 universals, Universal 7 touches on adverbial placement and its relation

to basic word order . Universal 7 is stated in (10) (p. 80).

(10) Universal 7

If a language with dominant SOV order, there is no alternative basic order, or only OSV as the alternative, then all adverbial modifiers of the verb likewise precede the verb.

Universal 7 holds true in many of the sample languages, though admittedly it is not exceptionless. However, the main question is not just whether some universals are held statistically, but how these universals can be theoretically generalized, for example, why should a particular word order pattern cluster with a specific adverbial placement pattern?

Greenberg suggested some theoretical possibilities in the paper though he admitted that they were tentitive. He advocated the harmonic relations between word orders. For instance, there is a general tendency to place the modified and the modifier in a particular way. In VSO languages, the verb is the modified and others are the modifiers, which indicates that in these languages, there is a tendency for the modified to precede the modifiers, resulting in a cluster of properties like prepositions, NG (noun-genitive), VS, VO, and NA (noun-adjective). On the other hand, in SOV languages, the verb follows other modifiers, resulting in a cluster of properties like postpositions, GN, SV, OV, and AN. These generalizations, in turn, imply that a SOV language clusters with the preverbal adverbials as adverbials are modifiers of the verb, the modified.

After Greenberg (1963) set forth the pioneering findings in word order typology, progress has been made both empirically and explanatorily. Comrie (1989) summarizes the two trends in post-Greenberg research:

(11) With the less intuitively plausible universals, however, one senses a certain tension between, on the one hand, empirical validity without a coherent conceptual systems, and, on the other, plausible coherent conceptual system which, however, lack empirical validity. (p. 94)

Greenberg's generalizations were then pursued and tailored by Lehmann and Vennemann (Comrie 1989, Hawkins 1980). Our discussion, nevertheless, centers on the latter since Vennemann's accounts had more significant impact on word order typology. Vennemann reduces Greenberg's three-way typology of VSO/SVO/SOV to two basic verb positions: VO or OV. Therefore, he collapses VSO and SVO into one type on the basis of their similar V before O order. He further proposes "operator" and "operand" in accommodating the word order relation in these two types of languages: VO languages have co-occurrences with operand before operator, whereas OV languages have the reverse order, with operator before operand. These mirror-image contrasts for all operators and operands were serialized in the "Natural Serialization Principle". Under this principle, Greenberg's Unilateral Implications are expanded to Bilateral Implications. Each word order pattern, not just the basic word order pattern, can now in turn imply some other word order pattern. For example, the overall preverbal adverbial placement can imply the basic OV word order.

Although Vennemann's proposition of operator-operand relation can achieve conceptual simplicity in analyzing a lump sum of word order facts, it, nevertheless, is far-reaching in attaining empirical validity. Many languages do not show such a unique pattern in ordering their functional units. SOV languages do not uniformly have postposition, AN and GN, while VSO languages do not uniquely have preposition, NA and NG, not to mention the SVO languages, which can almost predict nothing. But it should be admitted that the operator-operand relation depicts a tendency, though not an absolute fact, in word order permutation.

Hawkins (1980) then divides word order universals into implicational and distributional universals to accommodate two different set of data in word order typology. Implicational universals simulate Greenberg's unilateral implications but Hawkins adds in more than two parameters and argues that some word order patterns are better predictors than others. For example, Implicational Universal (I) states that in SOV languages, if the adjective precedes the noun, then the genitive precedes the nouns, i.e. AN $\supset$ GN. But if NA is attested in a SOV language, this rule is still not violated. It can only exclude the co-occurrence of SOV, AN and NG, but not others. All the Implicational Universals are supposed to be exceptionless.

Distributional Universals depict tendencies in word order co-occurrences. For example, the tendency of occurrence of SOV & postposition & AN & GN is higher than SOV & postposition & NA & GN, which in turn, has higher occurring frequency than SOV & postposition & NA & NG. The significance here is that languages do show Cross-Category Harmony: the head is preferred to place at one side and languages with smaller deviation (e.g. NA) are attested to occur more often than those with bigger deviation (e.g. both NA and NG).

Hawkins (1980) provides the word order co-occurring facts but not an explanatory account. Hawkins (1990, 1994) then supplements this deficiency. Hawkins (1990, 1994) adopts the language processing approach to account for word order universals and illustrates why consistent left- or right-branching is preferred to a mixture of the two in processing, which is concomitant with the higher occurring frequency of single headedness in the world's languages.[13]

Word order typology is widely used by many researchers in the analysis of various aspects of grammar The word order pattern is generally parameterized into different head-directions: some languages adopt the head-initial parametric value with the head preceding other modifiers and some adopt the head-final parametric value with the head following other modifiers. Certain other properties of word order can be predicted based on the choice of a parametric value.

If we adopt this analysis, we may be content to simply apply the head-direction parameter to Chinese to account for adverbial placement. However, there may be exceptions to each cluster of word order patterns according to the head-modifier paradigm. A particular word order pattern may not uniformly imply some other word order patterns. Most important of all, controversy has been raging over assigning Chinese to a SVO or SOV language.

Below we briefly go through the arguments for both SVO and SOV as the basic

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[13] Here we skip the details of the processing account. See also Hawkins (1983) for a grammatical account for word order universals and Hawkins (1987) for the application of implication universals to language acquisition. Dryer (1992), on the other hand, proposes the replacement of the Head-Dependent Theory by the Branching Direction Theory.

word order in Chinese. Tai (1973) was the first to formulate the idea that Chinese is a SOV language. (adopted from Mulder & Sybesma 1992) Li and Thompson (1975, 1981) claim that Modern Chinese is basically SOV, or is becoming SOV. The most unmarked word order SVO observed in Chinese is in fact a residue of Classical Chinese. They hypothesize that Chinese is undergoing a word order change, going from SVO pattern to SOV pattern in Modern Chinese. The strongest evidence is the increasing use of the *ba*-construction, which preposes the object to preverbal position, changing the whole sentence structure to SOV. The rise of compound verbs serves as another piece of evidence.[14] Huang (1982), Koopman (1984), Li (1990), Tang (1990), and Travis (1984) also adopt the hypothesis of Chinese as a SOV language for further research on Chinese word order and other syntactic configurations.

Light (1979) objects to the hypothesis that Chinese is a SOV language and argues that the most unmarked Chinese word order is still SVO. All the preposed noun phrases are in fact marked in some sense. The Chinese structural properties superficially associated with the SOV language type can also be explained by other principles, like the Whole-before-part Principle and the relation between word order and meaning.[15] In addition, even though a cluster of properties co-occurring in SOV languages is observed in Chinese, there is more or less equal amount of properties that identify Chinese with other SVO languages. Apart from the surface VO structure, the linear precedence of verb over complementation, and of negative marker and modal verb over main verb, and so on typify Chinese as a SVO language.

Mei (1980) also suspects the so-called head-final properties in Chinese. He claims that the *ba*-construction is a transformed structure and subject to many constrains for application. Therefore, it is more marked. In addition, Tai (1973) is self-contradictory and ridiculous in many aspects in assigning Chinese as a SOV language. Finally, Mei (1980) presents that in fact, Chinese shows regularization in the SVO structure, which

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[14] Travis (1984) also postulates a word order shift in Modern Chinese but she casts the whole issue in the general headedness parameter.

[15] See Light (1979) for the discussion of the Whole-before-part Principle and the relation between word order and meaning. Since these two arguments involve much detail, we will not go into the nuts and bolts here.

then counters the postulation by Li & Thompson (1975) that Chinese is undergoing word order change.

Zhou (1989) argues that Chinese is a head-initial language. Chinese NP phrases are head-initial in deep structure and the perceived head-final feature in surface structure results from movement. Moreover, *ba* can absorb the Case-assigning ability of the verb and triggers the obligatory movement of the object complement to preverbal position. Finally, θ-identification is discharged to the left in Chinese by the head for non-argument modifiers, contributing to the overall preverbal placement of adverbials.

If Chinese is a SOV language, as some researchers propose, the preverbal placement of manner adverbials, together with a large amount of temporal, locative adverbials and so on, can simply be accounted for by postulating the head-final parametric value in Chinese. The head-final quality correlates with a cluster of properties, principled by the precedence of modifer over modifee. Since manner adverbials are the modifier and the verb phrase is the modifee and the head, the preverbal placement of manner adverbials is rationalized.

However, no matter how the researchers push the underlying SOV structure in Chinese, in the second language context, the learners seem less likely to be convinced. SVO is still the most unmarked word order as well as the most frequent structure. Its abundant input, as a result, would serve as strong evidence for its being the basic word order in Chinese. Therefore, to the second language learners, the correlation between word order and adverbial placement is hardly attested.

If the correlation between word order and adverbial placement does not exist, at least when the second language context is concerned, the unlearning of postverbal manner adverbials, if negative transfer is assumed, would constitute the learnability problem (See Section 1.3 and 1.4).[16] Section 5.3.1 suggests some possible accounts for overcoming this learnability problem.

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[16] In fact, even if SOV structure is assumed, we also face the learnability problem, though different from the one with the SVO order. With the limited evidence of Chinese as a SOV language (Li & Thompson 1979), how could the learners counter the enormous input of VO structure and get to know that Chinese's underlying basic word order is SOV?

To summarize this section, we began with the discussion of the word order typology proposed by Greenberg (1963). The word order typology is aimed to characterize word order properties of many natural languages. A number of word order patterns are discovered and are adopted by the linguists to develop the head-initial/final parameter. Each language is supposed to follow one head direction and based on this head direction, other word order facts are borne out. A head-initial language correlates with the rightward placement of all other elements, including the modifiers like adverbials, to the head. A head-final language, by contrast, implies the leftward placement of all the modifiers.

Some languages may have distinct basic word order pattern which is unambiguously identified with a specific head-direction. Chinese, however, is a more complicated language and the debate has hovered over whether it is a SVO or SOV language. Both sides have their argument and supporting evidence. But since most Chinese sentences are in SVO order and most important of all, they constitute the main source of input to the learners of Chinese, the hypothesis of the correlation between the head-final parameter in Chinese and the preverbal placement of manner adverbials might not be held. If SVO order is assumed and since the SVO order is not a good predictor of other word order facts, (Comrie 1989, Hawkins 1990) the learners would be unable to acquire triggers for adverbial placement from the basic word order. As a result, we face the problem of the unlearning of postverbal manner adverbials, which might be transferred from L1 English.

3.2.2 The placement of Chinese D/F adverbials

The acquisition of overall leftward adverbial placement may be countered by the rightward placement of D/F adverbials. Hence, the learners might adopt other theories or strategies to deal with this peculiar adverbial category. In the following, three accounts concerning the placement of D/F adverbials will be discussed.

3.2.2.1 Ernst (1996)

Ernst (1996) posits that adjuncts can also receive Structural Case from the verb,

as in Russian, Korean and Finnish. The verb, so to speak, can assign not only one Case, but most probably, two Structural Cases, one to the object and one to the NP adjunct.[17] Since Case in Chinese is assigned to the right, D/F adverbials must occur to the right in order to receive the Case. In addition, Ernst postulates that D/F adverbials are base-generated to the right of the verb, which, will avoid forming the illegitimate chain resulted from moving down the D/F adverbials from the preverbal to postverbal position.

This account is problematic in many ways. First, since Chinese, unlike Russian and Korean, lacks morphological Case marking, the postulation of Adjunct Case assignment demands more concrete evidence. The existence of a handful of preverbal NP adverbials (like the temporal and the definite D/F adverbials[18]) also calls into question the assumption that D/F adverbial is postverbal because of Case Requirement. Another argument against Ernst's account is the postverbal occurrence of PPs and AdvP/AdjP D/F adverbials as shown in (12).

(12) a. 他放了那本書在桌子上。

Ta fang-le nei ben shu zai zhuozi shang.

He put-ASP that CL book on table up.

"He put that book on the table."

b. 他看了很久的書。

Ta kan-le hen jiu de shu.

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[17] See also Section 3.1.2 for the discussion of case assignment to NP adverbials.

[18] With respect to the Case of temporal adverbials, Ernst follows Bresnan and Grimshaw (1978) (See section 3.1.2 for discussion) and posits a zero preposition to assign Case. Moreover, they cannot move to postverbal positions to receive Case assigned by the verb because they are in AspP or above and intrinsically outside VP. However, more evidence is required to support the instantiation of zero preposition. In addition, it is curious why no zero preposition can assign Case to D/F adverbial directly. Ernst, on the other hand, argues that the preverbal definite D/F adverbials can get Case from their base position. But one would wonder why only definite D/F adverbials, but not the indefinite ones, can get Case in preverbal positions. In short, the major shortcoming is that as long as an adverbial can receive Case from a zero preposition, the postverbal generation of D/F adverbials in order to acquire Adjunct Case from the verb lacks justification. Moreover, it is not economical to have two methods of assigning Case to adverbials.

He read-ASP very long-time POSS book.

'He has been reading book for long time.'

In (12a), *zai zhuozi* is a locative phrase specifying the location of the book. *Zhuozi* is preceded by the preposition *zai* and followed by the localizer *shang*. It is generally assumed that the preposition *zai* has the sole function of assigning Case to the NP *zhuozi*. It, as a result, does not carry any semantic content, unlike the localizer *shang*, which carries the meaning of 'on'. According to Ernst, the verb *fang* should be able to assign Structural Case to the object *nei ben shu* and another Structural Case to the subcategorized adjunct *zhuozi shang*. If this was the case, *zai* need not be present in (12a) since the Case Filter is fulfilled. However, the fact is contrary to the prediction as *zai* is obligatory.

In (12b), *hen jiu* is an adverbial phrase of duration which does not need Case. However, it appears to the right of the verb *kan*, which indirectly suggests that postverbal D/F phrase may have no relation to Case assignment.

In short, to account for the postverbal occurrence of D/F adverbials by simply using the argument of directionality of Case assignment is far from satisfactory. Some other syntactic or semantic accounts are needed in order to explain the placement of this exceptional adverbial category.

3.2.2.2 Huang (1992)

Huang (1992) regards the intervention of the D/F adverbial between verb and object as a syntax-semantics mismatch. The D/F adverbial quantifies over the VP but it itself resides inside the VP. Therefore, it occurs in a semantically 'unexpected' position. This mismatch must be caused by some syntactic operation which brings an element from its semantically expected position to its syntactically observed position. Huang suggests that verb raising be this syntactic operation.

Following Pollock (1989), Huang postulates that verb raising before LF does not occur in Chinese in most instances. (13) and (14) (adopted from Huang 1992 p.2) can serve as evidence.

(13) a. 張三不喜歡李四。

Zhangsan bu xihuan Lisi.

Zhangsan not like Lisi.

"Zhangsan does not like Lisi."

b. *張三喜歡不李四。

Zhangsan xihuan bu Lisi.

Zhangsan like not Lisi.

"Zhangsan does not like Lisi."

(14) a. 張三常常罵李四。

Zhangsan changchang ma Lisi.

Zhangsan always scold Lisi.

"Zhangsan always scolds Lisi."

b. *張三罵常常李四。

Zhangsan ma changchang Lisi.

Zhangsan scold always Lisi.

"Zhangsan always scolds Lisi."

The main verbs *xihuan* in (13) and *ma* in (14) cannot precede the negator *bu* and the adverbial *changchang* in surface structure respectively. These examples show that verb raising does not occur in Chinese before LF, since if the verb raised to infl, it would pass by the negator and the adverbial, resulting in its leftward placement to those two elements in the surface structure.

However, Huang proposes that verb raising can occur in Chinese under a very restrictive condition. The sentence with the intervention of the D/F adverbial is assumed to involve a structure of gerundive nominalization[19] and a process of verb-raising as diagrammed in (15) (p. 5).

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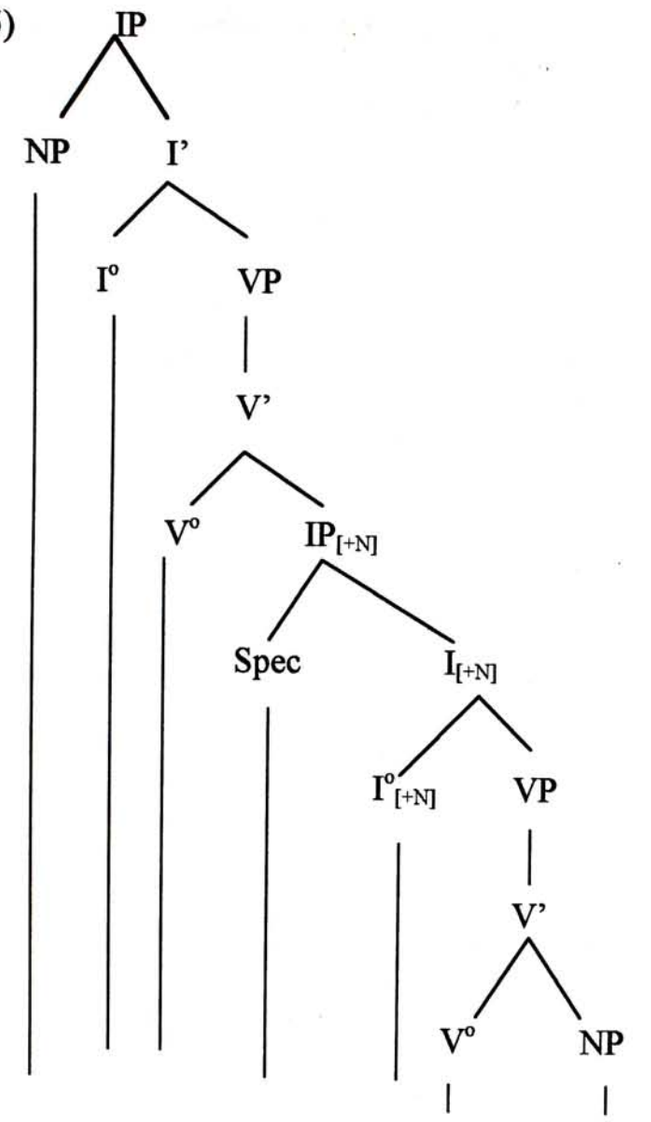
[19] Huang (1992) has not elucidated gerundive nominalization clearly. He, however, points out that gerundives are nominal IPs, characterized by the features [+I, +N, -V]. I stands for the IP properties. Therefore, gerundive nominalization may be a process by which a verbal phrase transforms to a nominal phrase.

(15)



The gerund phrases behave externally as noun phrases because they occupy typical NP positions, but internally as VPs because the verb may take a direct object and assign the Accusative Case to it. Huang postulates that in (15) the verb phrase *kan shu* is a VP, serving as complement to an empty $I^0_{[+N]}$ meaning 'do'. The nominalized I' is modified by a D/F adverbial *san tian*, which is in the Spec position. The whole $IP_{[+N]}$ is in turn the complement of the main verb. Therefore, at D-Structure, the whole sentence reads as 'He did three days of reading books.'

Kan, however, cannot stay-in-situ because the whole nominal IP ($IP_{[+N]}$) needs Case. (Reuland 1983) It moves through the nominal I to V of the main clause. The verb *kan* ends up in V and assigns Case to the whole gerund phrase. This verb movement

results in the intervention of *san tian* between the verb *kan* and the object *shu* in S-Structure. The sentence surfaces as '*He read three days of books' after verb movement.

Semantically, the D/F adverbial quantifies over VPs but after verb movement, it becomes the nominal measure phrase. This is evidenced by its formation as a movable constituent with the object and the possibility of inserting *de* after it as in (16) and (17) (adopted from Huang 1992 p. 4 and p.7 respectively).

(16) 他連一天書都沒看。

Ta lian yitian shu dou mei kan.

He even one-day book dou not read.

"He has not done even one day's worth of reading."

(17) 他看了三天的書。

Ta kan-le santian de shu.

He read-ASP three-day POSS book.

"He has been reading for three days."

There are many problems with this account. First, the semantic content of the nominalized I^0 is unknown. The selection of VP by I^0 is then free from restriction. Second, it is counter-intuitive that the D/F adverbial is a modifier of IP, instead of VP. Third, this account still excludes the possibility that the D/F adverbial can occur in post-object position if the object is definite. Finally, one of the major problems is the instantiation of a gerund phrase. It is questionable why a gerund phrase is instantiated in a sentence containing a D/F adverbial. What triggers the generation of a gerund phrase in the light of the existence of a D/F adverbial in a sentence? Most importantly, unlike English, Chinese lacks the gerundive morphology; as a result, the hypothesis of its existence seems unable to withhold.

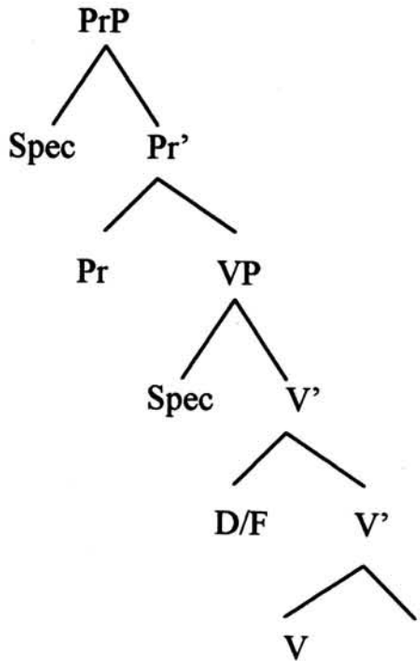
In short, verb raising and adverbial placement may be closely related (Pollock 1989) but the postulation of verb movement in Chinese should be supported by more evidence since on the one hand, Chinese lacks overt morphologies, and on the other hand, the negator and many adverbials precede the verb. The intervention of the D/F

adverbials may not be sufficient to support verb raising in Chinese. The instantiation of the gerund phrase in Chinese is even more groundless.

3.2.2.3 Tang (1990)

Tang (1990) posits Chinese as a SOV language and consequently, the precedence of modifiers over modifiees. She follows this principle and Bowers (1988, 1989) in analyzing D/F adverbial placement.[20] The manner adverbials are licensed and projected in PredP but D/F adverbials are licensed and projected in VP. This difference in base-generation slot constitutes their difference in placement and most important of all, accounts for the postverbal placement of D/F adverbials. The syntactic configuration is shown in (18) (adopted from Tang 1990 p. 154).

(18)



The D/F adverbial is projected as the adjunct, adjoined to V'. The object is located

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[20] Though Tang (1990) and Bowers (1993) adopt the same principles in accounting for adverbial placement in Chinese and English respectively, we cannot detect the coherence between these two accounts in deriving the learnability principles of Chinese adverbial placement. Bowers (1993) hypothesizes that English manner adverbs can be licensed by both PredP and VP but does not mention the licensing properties of NP and PP adverbials. Tang (1990), on the other hand, postulates that Chinese manner adverbs are licensed by PredP but D/F NP adverbials are licensed by VP. Thus, the learnability difficulty appears to be the unlearning of VP licensed Chinese manner adverbs. However, since the interface between adverbial semantics and adverbial adjunction is far from well-known, it is too adventurous to confirm such a learning principle.

at the Spec of VP. V raising to Pr is obligatory because according to Bowers (1993), VP contains an unsaturated θ-grid and V raises to look for another argument so as to assign all the θ-roles in the θ-grid. After V raising, the D/F adverbial is left behind and the whole configuration surfaces as S V O D/F. This word order is allowed as long as the object is definite. If the object is generic, only D/F adverbial intervention between verb and object is allowed. Tang proposes Chomsky-adjoining of the D/F adverbial to VP so as to realize the D/F adverbial intervention even though strict adjacency between verb and object is breached after this syntactic operation.

Tang has not portrayed the structural configuration after Chomsky-adjoining of D/F adverbials to VP, resulting in adverbial intervention. But it is possible that as Huang (1992) suggests, the D/F adverbials are integrated into the phrasal structure of the object complement, becoming the nominal measure phrase, which is movable with the object.

Three problems arise in this account. First, what assigns Case to the D/F adverbial? Second, how and why do the definiteness effects affect word order? Third, why do the manner adverbials have larger scope over the D/F adverbials. The first problem is resolved by postulating an empty P which Case-marks the D/F adverbial. (Bresnan and Grimshaw1978 and McCawley 1988). The second problem is explained away in functional terms-theme and rheme in Tang (1990). But her functional account is quite perplexing and hard to understand.[21] We may leave the question of the definiteness effects open in this thesis.

Indeed, the less illustrated argument of this account is the licensing of different types of adverbials. Tang adopts Travis' (1988) analysis in positing that different adverbials are licensed by different heads. Some heads can license more than one type of adverbial and similarly some adverbials can be licensed by more than one head. For example, the Chinese manner adverbials are licensed by PredP, the temporal adverbials

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[21] Tang (1990) suggests that the definite noun phrases preceding D/F adverbials tend to be interpreted as some sort of theme and the following D/F adverbials, rheme. Then she says: 'yet, although generic noun phrases may function as theme, they do not seem to behave the same when followed by duration and frequency phrases.' (p. 156) Then, she does not explain how and why generic noun phrases behave

are licensed by IP or PredP, and the D/F adverbials are licensed by VP. Different heads carry different features and the features can be percolated to the adverbials. Therefore, VP adverbials and PredP adverbials cannot interchange their places.

Then, the next question is how to determine which adverbial should be generated in which maximal projection. Travis (1988) uses terms like 'Manner/Agent', 'Event/AGR', and 'Speaker' to characterize both the head and the adverbial. Tang, however, adopts the notion of scope of modification in classifying different adverbials. 'What is involved in determining the generation and distribution of adverbs is the possible domain that an adverb may modify or have scope over.' (Tang 1990, p. 133) As a result, adverbials of the same scope of modification should be base-generated in the same maximal projection and the scope of the adverbial should not extend beyond the maximal projection where it is generated. Tang further proposes that the semantic notions like state, event, action, and so on are the notions defining scopes. If XP denotes a state, and adverbial AP has scope over a state, it can be licensed by XP. For example, Chinese manner adverbials have scope over proposition and thus, they should be licensed by PredP, which denotes a proposition. It should, nevertheless, be noted that different adverbials may be licensed by the same head, provided that they have scope over the same domain. Both the temporal and locative adverbials could be licensed by IP. Similarly, an adverbial can be licensed by different heads, on the condition that some adverbials can modify, say, either an event or an action. Once again both the temporal and locative adverbials could be projected under IP or PredP.

Then we come to the problem what semantic notions like event, action, and etc. manner and D/F adverbials should have scope over, contributing to the larger modification scope of the former over the latter. Tang sketches a principled relationship between adverbial scope and adverbial adjunction but gives no in-depth discussion over the exact scope of each type of adverbial. Therefore, it is uncertain why manner adverbials have scope over D/F adverbials, specially when this hypothesis is counter-intuitive.[22]

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differently when followed by D/F adverbials.

[22] More doubt would be cast on the hypothesis that manner adverbials have larger scope than D/F

This account is nevertheless better than others in many respects. First, a unified account of leftward base-generation of all the adverbials is sustained. Second, the syntactic operation of verb raising is equally applicable in all instances. The difference only lies in different generation slots of the manner and D/F adverbials. Third, different generation slots for different adverbials are supported by other languages like English as well. The semantics of adverbials and its relation to sentence structure as a whole is also discussed in some other accounts. (See section 3.1.1.2) If adverbials differ in semantic content, their manifestations in different syntactic positions are conceivable. The major shortcoming of this account, however, also lies in the classification of different adverbials. What semantic commonality does each adverbial and each head carry? What semantic clues are shared by each adverbial and its corresponding scope of modification? Why is the scope of modification of some manner adverbials and D/F adverbials different in English and Chinese? Many problems about scope of modification of adverbials and their relation to heads are unresolved in this account.

3.3 Conclusion

If we compare English and Chinese with respect to the placement of manner and D/F adverbials, we can see two major differences. First, manner AdvPs in English can be placed preverbally and postverbally while manner NP and PP adverbials can only be placed postverbally. In Chinese, manner adverbials, usually realized as AdvPs, must be placed preverbally. According to the accounts discussed in Section 3.2.1, both English and Chinese are probably SVO language. Therefore, the unlearning of postverbal manner adverbials might constitute problems because first, the same language type of L1 and L2 might reinforce the learners' postulation that the L2 resembles the L1 and thus, the manner adverbials could be placed before as well as after the verb; second, evidence for the impossibility of postverbal placement of manner adverbials seems not readily and necessarily available.

Another difference concerns D/F adverbial placement. In English, D/F adverbials are usually realized as NPs or PPs and consequently, they must be placed postverbally. Some D/F AdvPs like *frequently*, however, can still be placed preverbally. In Chinese,

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adverbials when the results of the experiment is considered. We will discuss this point in chapter 5.

D/F adverbials are placed postverbally and depending on the properties of the object complement, some D/F adverbials should be inserted between verb and object. If we adopt Tang (1990), this is due to different levels of adverbial projection. The manner adverbial is licensed by PredP whereas the D/F adverbial is licensed by VP.

To sum up, the overall preverbal adverbial placement in Chinese might not deem to the SOV word order. The SVO order is more prevailing and salient to the learners. In addition, different levels of projection of manner and D/F adverbials in Chinese contributes to the postverbal placement of all D/F adverbials. Based on the analysis in this chapter, we designed an experiment which tested learners' adverbial placement in Chinese.

Chapter 4

The Experiment and the Results

This chapter illustrates how the experiment was designed and conducted and the results of the experiment are summarized and presented. Some possible shortcomings in design and methodology will also be discussed.

4.1 The subjects

All the subjects were native speakers of English.[1] They were divided into two groups according to their level of proficiency in Chinese.[2] The first group (henceforth GP 1) was formed by elementary to intermediate learners (n = 15). The second group (henceforth GP 2) was composed of advanced learners (n = 15). Table 1 summarizes the background of these two groups of learners.

Table 1 Background of the subjects

	Sex	Mean Age	Mean Age of First Exposure to Chinese	Mean Duration of Formal Instruction Received	Mean Duration of Living in Mandarin-speaking Countries
GP 1 (elementary to intermediate)	6M & 9F	32.9 years	29.3 years	12.9 months	4.7 months
GP 2 (advanced)	11 M & 4 F	39.7 years	23.1 years	57.2 months	37.8 months

[1] The Chinese descendants were excluded even though they constituted most of the learners of Chinese in many places.

[2] The subjects have been asked to do a cloze test. The classification of the subjects into their respective group was based on the results of the cloze test.

Table 1 shows that GP 2 learners were on average much older than GP 1 learners (mean age = 32.93 years old and 39.73 years old respectively). GP 2 learners started to learn Chinese at a younger age (mean age of first exposure = 23.1 years old, compared with 29.3 years old of GP 1 learners), though both groups of learners had reached adulthood when they were first exposed to Chinese. GP 2 learners had also received longer formal instruction in Chinese than GP 1 learners. Lastly, GP 2 learners had lived in Mandarin-speaking countries for longer period of time. In saying Mandarin-speaking countries, we mean the PRC and Taiwan; in other words, Hong Kong and Singapore are excluded. Some more details of the background of the subjects will be discussed in Section 4.3.

Finally, there was a Control group which consisted of 15 native speakers of Mandarin Chinese (n = 15).

4.2 The experiment

The experiment consisted of two tasks. The first was an elicited production task and the second was a grammaticality judgment task.

4.2.1 The production task

The production task comprised 12 pictures and underneath each picture there was a string of phrases provided. The subjects were asked to use the phrases provided to compose a sentence to describe the picture. There was no restriction on the number of words used for describing each picture and the subjects could write in Chinese characters or *pinyin*. (See Appendix A for the full version of this task.)

Of the 12 pictures, there were 4 manner adverbials, 4 frequency adverbials and 4 duration adverbials. The items in each category are listed below:

a. the manner adverbials: 靜靜地 (jingjing-de) (quickly)
   專心地 (zhuanxin-de) (attentively)
   大聲地 (dasheng-de) (loudly)
   小心地 (xiaoxin-de) (carefully)

b. the frequency adverbials: 幾次 (jici) (a few times)

兩次 (liangci) (two times)

五次 (wuci) (five times)

一回 (yihui) (one time)

c. the duration adverbials: 一整晚 (yi zheng wan) (one whole night)

五個小時 (wuge xiaoshi) (five hours)

半天 (bantian) (half day)

一整天 (yi zheng tian) (one whole day)

Apart from the adverbial phrases, the subjects were also given a verb phrase and an object complement for each picture, which were to force the subjects to use, besides the adverbials, a transitive verb together with an object complement to describe the picture. The intention, as mentioned in Section 1.4, was to test whether the learners allowed violation of strict adjacency in Chinese. In addition, those vocabularies could help to reduce the vocabulary burden of the learners as some learners might not know the phrases used to describe an action. The three phrases-the verb phrase, the object complement, and the adverbial-underneath each picture were ordered in a fixed sequence. For each string of vocabulary given for each picture, the adverbial comes first, followed by the object complement, and then by the verb phrase. (See Appendix A) Some compound verbs like *changge* (sing song) and *huahua* (draw painting) were deliberately segmented as two items-a verb and an object complement, so that the subjects could treat them as separable units and entertain the possibility of inserting adverbials between them. The 12 pictures were randomized.

4.2.2 The grammaticality judgment task

The second task was a grammaticality judgment task consisting of 72 sentences. An example of each test structure is listed below (See Appendix B for all the sentences used):

a. MVO (manner adverbial + verb + an object) (4 tokens)

e.g. 小張很快地看完這本書。

Xiaozhang hen kuai-de kan wan zhei ben shu.

Xiaozhang very quick-ADV read finish this CL book.

"Xiaozhang finished reading this book quickly."

b. *VMO (verb + manner adverbial + an object) (4 tokens)

e.g. 那同學回答很小心地問題。

Na tongxue huida hen xiaoxin-de wenti.

That student answer very careful-ADV question.

"That student answered the question very carefully."

c. *VOM (verb + an object + manner adverbial) (4 tokens)

e.g. 小李溫習功課努力地。

Xiaoli wenxi gongke nuli-de.

Xiaoli revise homework industrious-ADV.

"Xiaoli revised the homework industriously."

d. *DFVO (d/f adverbial + verb + object) (4 tokens:2D+2F)

e.g. 他三次打了電話，還是打不通。

Ta sanci da-le dianhua, haishi da bu tong.

He three-time call-ASP telephone, still call not through.

"He called three times, but still could not get the line."

e. VDFO (verb + d/f adverbial + object) (4 tokens:2D+2F)

e.g. 我看了半天報紙。

Wo kan-le bantian baozhi.

I read-ASP half-day newspaper.

"I have been reading newspaper for a half day."

f. ??VODF (verb + object + d/f adverbial) (4 tokens:2D+2F)

e.g. 小王昨天跳了中國舞一天。

Xiaowang zuotian tiao-le Zhongguo wu yitian.

Xiaowang yesterday dance-ASP Chinese dance one-day.

"Xiaowang danced the Chinese dance for one day yesterday."

g. VDF_{OBL} (verb +obligatory d/f adverbial)[3] (4 tokens:2D+2F)

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[3] In English, there are also obligatory AdvP adverbials. The verb, like *behave*, takes an AdvP adverbial

e.g. 他很喜歡騎馬，只一星期已騎了兩次。

Ta hen xihuan qima, zhi yi xingqi yi qile liangci.

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as verbal complement (as (i) below), or the verb takes an object complement together with an obligatory AdvP adverbial (as (ii) below) to complete the sentence.

(i) Joan behaved well.

(ii) Martina worded the letter carefully.

In Chinese, if the verb is transitive and there is an obligatory adverbial, the object complement is usually topicalized as in (iii) or inferred in the context as in (iv).

(iii) 最近經濟不好，很多貨他賣了一個月，也賣不出。

Zuijin jingji bu hao, hen duo huo ta mai-le yige yue, ye mai bu chu.

Recently economy not good, very many goods he sell-ASP one month, still sell not out.

"Recently, the economic condition was not good. For many goods, he could not sell out for a month."

(iv) 很多人都說麻將好玩，但是他打過幾次以後，却覺得沒意思，以後就不打了。

Hen duo ren dou shuo majiang hao wan, danshi ta da-guo jici yihou, que juede mei yisi, yihou jiu bu da le.

Very many people say mah-jong good play, but he play-EXP few time after, but feel not meaningful, afterward then not play PART.

"Many people said mah-jong is of great fun. However, after he played for a few times, he did not find it meaningful. Thereafter, he did not played again."

However, note that the D/F adverbial in one test sentence might be marginal obligatory complement. In other words, the meaning of the sentence seems to be more complete with it, even though its absence might not cause problem to the grammaticality of the sentence. This sentence is (v) below.

(v) 這齣電影很好看，我看了(三次)。

Zhe chu dianying hen hao kan, wo kanle (sanci).

This CL movie very good look, I watch-ASP (three-time).

"This movie is very good. I have watched it (three-times)."

Sanci (three time) may be optional in this case. Therefore, the learners might judge the D/F adverbial in this type of sentence as adjunctive adverbial. But apart from this sentence, the D/F adverbials in the other 3 test sentences of this structure were obligatory elements.

He very like horse-riding, only one week already ride-ASP two-time.

"He likes riding horse very much. Within one week, he was already on horse twice."

h. *$DF_{OBL}V$ (d/f obligatory adverbial + verb) (4 tokens)

e.g. 怎麼小陳還不來，我們半個小時等了。

Zenme Xiaochen hai bu lai, woman bange xiaoshi deng le.

Why Xiaochen still not come, we half hour wait PART.

"Why did Xiaochen still not come? We have been waiting for half an hour."

i. VV (verb + object + verb + d/f adverbial) (4 tokens)

e.g. 小玲做點心做過幾趟，便不做了。

Xiaoling zuo dianxin zuo-guo jitang, bian bu zuo le.

Xiaoling do dimsum do-EXP few-time, then not do PART.

"Xiaoling had made dimsum for a few times. Then she did not make it anymore."

j. $NP_{ADV}VO$ (NP adverbial + verb + complement) (2 tokens)[4]

e.g. 李小姐明天來香港。

Li xiaojie mingtian lai Xianggang.

Li Miss tomorrow come Hongkong.

"Miss Li comes Hong Kong tomorrow."

k. *$VONP_{ADV}$ (verb + complement + NP adverbial) (2 tokens)

e.g. 我起床早上八點。

Wo qi chuang zaoshang ba dian.

I get-up bed morning eight o'clock.

"I got up at eight o'clock in the morning."

l. $PP_{ADV}VO$ (PP adverbial + verb + complement) (2 tokens)

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[4] There were only two tokens for each placement pattern of NP adverbials, PP adverbials, and AdvP adverbials. This is because they could be lumped into one larger category of sentence adverbial, and in total each placement pattern of this larger category includes 6 tokens. They were used to test whether the learners virtually knew the impossibility of post-object placement of all types of adverbials.

e.g. 李四跟陳老師學習音樂。

Lisi gen Chen laoshi xuexi yinyue.

Lisi from Chen teacher learn music.

"Lisi learns music from Mr/Ms Chen."

m. *$VOPP_{ADV}$ (verb + complement + PP adverbial) (2 tokens)

e.g. 他做功課在床上。

Ta zuo gongke zai chuang shang.

He do homework on bed up.

"He did homework in bed."

n. AVO (AdvP adverbial + verb + complement) (2 tokens)

e.g. 王同學常常看電視。

Wang tongxue changchang kan dianshi.

Wang student always watch TV.

"Wang always watches TV."

o. *VOA (verb + complement + AdvP adverbial) (2 tokens)

e.g. 他去圖書館很少。

Ta qu tushuguan hen shao.

He go library very rare.

"He rarely goes to library."

p. *MDFVO (manner adv. + d/f adv. + verb + object) (2 tokens: 1D+1F)[5]

e.g. 要有好前途，你得努力地幾年念漢語。

Yao you hao qiantu, ni dei nuli-de jinian nian hanyu.

Need have good prospect, you need industrious-ADV few-year study

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[5] There were only 2 tokens for each preverbal and post-object placement pattern of both the manner and the D/F adverbial, since if the learner assumed a fixed order of adverbial adjunction to the verb phrase, this adjunction pattern could occur in preverbal and/or post-object position. Hence, for example, MDFVO and VODFM (4 tokens in total) together amount to form a hypothesis that the D/F adverbial should be adjoined to the verb phrase before the manner adverbial in preverbal and postverbal position respectively, resulting in the D/F adverbials occurring closer to the verb in both positions. See Section 5.3.3 for discussion of order of adverbial adjunction.

Chinese.

"If you want to have good prospect, you need to study Chinese industriously for a few years."

q. *DFMVO (d/f adv. + manner adv. + verb + object) (2 tokens: 1D+1F)

e.g. 老王每天都兩遍習慣地打太極。

Laowang meitian dou liangpian xiguan-de da taiji.

Laowang every-day dou two-time habitual-ADV play taiqi.

"Laowang plays *taiqi* habitually two times every day."

r. *VOMDF (verb + object + manner adv. + d/f adv.) (2 tokens: 1D+1F)

e.g. 李四聽了音樂專心地半天。

Lisi ting-le yinyue zhuanxin-de bantian.

Lisi listen-ASP music attentive-ADV half-day.

"Lisi listened to music attentively for a half day."

s. *VODFM (verb + object + d/f adv. + manner adv.) (2 tokens: 1D+1F)

e.g. 他放假的時候，就會做中國菜一回開心地。

Ta fangjia de shihou, jiu hui zuo Zhongguo cai yihui kaixin-de.

He on-holiday POSS time, then will do Chinese food one-time happy-ADV.

"When he is on holiday, he will cook the Chinese cuisine happily once."

t. ??MVODF (manner adv. + verb + object + d/f adv.) (4 tokens: 2D+2F)

e.g. 小張靜靜地畫了油畫一天。

Xiaozhang jingjing-de hua-le youhua yitian.

Xiaozhang quiet-ADV paint-ASP painting one-day.

"Xiaozhang painted the painting quietly for a day."

u. *DFVOM (d/f adv. + verb + object + manner adv.) (4 tokens: 2D+2F)

e.g. 他兩次問了價錢低聲地。

Ta liangci wen-le jiaqian disheng-de.

He two-time ask-ASP price not-loud-ADV.

"He asked the price two times with a low voice."

v. MVDFO (manner adv. + verb + d/f adv. + object) (8 tokens:4D+4F)[6]

e.g. 我每天都認真地看一小時報紙。

Wo meitian dou renzhen-de kan yi xiaoshi baozhi.

I every-day dou meticulous-ADV read one hour newspaper.

"I reads newspaper meticulously for one hour every day."

MVO, VMO and VOM were designed to test the acceptability of different placement possibilities of the manner adverbials. Likewise, DFVO, VDFO and VODF were designed to test the placement of D/F adverbials. The VDF_{OBL} and $DF_{OBL}V$ structures were designed to test if the learners would generalize the rule of preverbal placement to the obligatory D/F adverbials. VV category was to see whether the learners accepted the possibility of expressing the conceptual categories duration and frequency in this structure and whether they only accepted D/F adverbials being governed individually by a verb. If the latter was the case, the learners should not accept the co-occurrence of the D/F adverbials with the object complements but only accepted VV. All the $NP_{ADV}VO$ and $VONP_{ADV}$, $PP_{ADV}VO$ and $VOPP_{ADV}$, AVO and VOA categories were designed to investigate where in the sentence the learners placed different types of adverbials. The co-occurrence of D/F adverbials and the manner adverbials was to examine their adjunction order to the verb phrase.

We followed the 4 principles below to construct the test sentences:

1. All the sentences, except those concerning the placement of NP adverbials, PP adverbials and AdvP adverbials, were formed with a thematic verb and an object complement. This aimed to examine whether the learners would allow adverbial insertion between the thematic verb and the object complement, and consequently, violate strict adjacency.

2. All the object complements, except those co-occurring with the manner adverbials, were intended to be generic. This was to exclude the definiteness effects, which might be a confounding variable. Moreover, generic object complements also made D/F adverbial insertion the most acceptable pattern (See section 2.2.3).

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[6] These 8 tokens consist of 4 duration adverbials and 4 frequency adverbials. It was so designed to see

3. No compound verbs were used as they might induce the learners not to split the verb-object complex and insert anything, for example, the D/F adverbials, inside.

4. All the manner adverbials ended with the morpheme *de* so as to avert the misinterpretation of their syntactic category. (See Section 2.2.2)

On the right of each test sentence, there were five numeral characters ranging from 1 to 5. Each of them stood for one category of judgment as listed below:

1 totally acceptable
2 quite acceptable
3 no opinion
4 quite unacceptable
5 totally unacceptable

The format of the grammaticality judgment task is exemplified below.[7]

	好				不好
李小姐 明天 來香港。	1	2	3	4	5
Li xiaojie mingtian lai Xianggang.					

On top of each new page, what the 5 numeral characters stand for were replicated in Chinese characters and English. The subjects were asked to circle a numeral character on the right to indicate their judgment for the acceptability of the given sentence. After that, they were required to circle the problematic part of the sentence which they construed as the source of oddity of the sentence. Needless to say, they were required to do so only if they circled 2 to 5.

The instructions for the two tasks were given in both Chinese (in characters) and English. Two examples were given to instruct the subjects how they should go about the task. Both tasks were presented in both the Chinese characters and *pinyin*. There were also two versions of Chinese characters (the traditional and the simplified

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whether the learners would place the two types of adverbials in different positions of a sentence.

[7] The *pinyin* shown below is not marked with tones. But in the questionnaires, the *pinyin*

characters), meeting the specific request of each subject. The whole experiment was self-paced and on average the subjects used 45 minutes to complete the two tasks.

4.3 The procedures

The subjects did the tasks on an individual basis. The study was mainly conducted in Hong Kong and the U.S.A. Four subjects, though, did the experiment in the mainland China. The subjects in Hong Kong constitute most of the GP 1 learners, even though two were classified as advanced learners in GP 2. All of the Hong Kong learners were taking some courses in Mandarin Chinese at the Chinese University of Hong Kong. Most of them were at the middle level in the progression. Depending on the number of courses they chose,[8] they spent roughly 7-12 hours a week in Mandarin classes.

There might be worries about the perplexing factor that the frequent input of Cantonese that the students received in Hong Kong affected the results of the experiment. With respect to the placement of manner and D/F adverbials, Cantonese and Mandarin do not differ. Cantonese manner adverbials are also placed before the verb, while the generic D/F adverbials are preferred to occur between verb and object. Thus, the Cantonese input might reinforce the learners' knowledge of Mandarin adverbial placement, even though nearly all of the learners admitted that they only knew simple Cantonese phrases.

Two of the four subjects in the mainland were registered full time students in Chinese at a university in Guangzhou. One of the four was an English instructor in the same university and had received 28 hours of formal education in Mandarin. The last one just worked in China.

The subjects in the U.S. constitute most of the GP 2 learners and were not taking any courses in Mandarin when doing the experiment. Most of them were mature learners and had studied Mandarin for many years. Some were Chinese-English

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corresponding to each sentence were all marked with tones. See Appendix B.

[8] Apart from the compulsory courses necessary for promotion, there were some elective courses, for example, courses for conversational Chinese and reading Chinese newspaper.

translators or teachers in Chinese.

Since the subjects were very varied in the length of formal education in Mandarin, the courses they had taken, the living experience in Mandarin-speaking countries, and so on,[9] they were required to do a cloze test to classify their Mandarin proficiency level and assign them to the respective groups in this experiment.

All the native controls were students of the Chinese University of Hong Kong and came from the mainland China.

All of the subjects were asked to do the production task first, and then the grammaticality judgment task. Since the judgment task was supposed to be hard for beginners, the learners were allowed to seek help on vocabulary from the experimenter. Some GP 1 learners demanded explanation for some vocabulary items but GP 2 learners rarely requested for assistance.[10] The experimenter explained the items in Chinese or English but did not illustrate with Chinese examples. On average the subjects used 10 minutes to do the production task and 35 minutes to do the grammaticality judgment task.

4.4 Overall results

In the following, we first look at the overall results of each task and then, the performance of individual learners on both tasks.

4.4.1 The production task

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[9] Even the students at the Chinese University of Hong Kong were very varied in their exposure to and the formal education in Chinese. Some of them were exchange students from universities in America and Canada and did not follow the promotion ladder at university's language center. The exchange students usually had studied Chinese in their home country for 2 or more years and further their studies for one or two semesters in Hong Kong. In addition, the length of residence in Mandarin-speaking countries seem to severely affect the learners' level of proficiency in Chinese. Therefore, a cloze test is essential for classifying the learners into different levels.

[10] Though the vocabulary used in the tasks were common daily used items, some GP 1 learners still had difficulties in understanding some sentences, especially the longer ones. Some learners even could not finish the test and their data were not used. The most difficult hurdle for them seems to be vocabulary.

4.4.1.1 The scoring procedure

The 12 production sentences were divided into 3 groups for analysis and each of which characterized one of the three adverbial categories, namely manner, frequency and duration adverbials. Therefore, there were 4 tokens for each adverbial category. The production sentences were classified according to the following structural categories:

Category 1 Preverbal placement

e.g. 他靜靜地看報紙。

Ta jingjing-de kan baozhi.

He quiet-ADV read newspaper.

"He reads newspaper quietly."

他一整晚洗衣服。

Ta yi zheng wan xi yifu.

He one whole night wash clothes.

"He did the washing for a whole night."

Category 2 Insertion between verb and object

e.g. 打五次電話後，事情仍未辦成。

Da wuci dianhua hou, shiqing reng wei ban cheng.

Call five-time telephone after, thing still not do finish.

"After five calls, things are still not done."

Category 3 Post-object placement

e.g. 他騎過馬兩次。

Ta qi-guo ma liangci.

He ride-EXP horse two-time.

"He rode horse twice."

Category 4 *Dou* construction

e.g. 這個婦女一整晚都在洗衣服。

Zheige funu yi zheng wan dou zai xi yifu.

This woman one whole night dou at wash clothes.

"This woman has been doing washing for a whole night."

If the adverbial phrase is placed preverbally, immediately followed by *dou*, the adverbial phrase is most probably interpreted definite. The given example denotes that *yi zheng wan* (the specific night) that the woman did the washing was known both to the speaker and the hearer. (See Section 2.2.3)

Category 5 Verb reduplication

e.g. 他們看書看了半天。

Taman kan shu kan-le bantian.

They read book read-ASP half-day.

"They have been reading for a half day."

In the verb reduplication structure, the same verb like *kan* in the above example is repeated to govern the object complement and the D/F adverbial respectively. The D/F adverbials in this structure, however, are not adjuncts but complements.

Category 6 Topic structure

e.g. 他電話打了五次。

Ta dianhua da-le wuci.

He telephone call-ASP five-time.

"Telephone, he used five times."

In a topic structure, the object may have been moved outside the verb phrase and becomes the secondary topic of the whole sentence. Another alternative is that the object complement has been used to create a context for the subsequent verb phrase. Because the context has made known the putative object in that verb phrase, it need not be repeated. The given example shows that the object complement *dianhua* (telephone) has been moved outside the verb phrase, which in turn makes the adverbial an obligatory element of the verb phrase. Therefore the topic structure allows the subjects to 'tactically' avoid placing the adverbial inside a verb phrase with an object complement.

Category 7 Irrelevant

This category was so labeled because the production sentences were irrelevant to the

goals of this research. The following were the most common irrelevant responses:

a. Punctual time adverbials

The subjects changed the D/F adverbials to punctual time or punctual frequency adverbials by inserting *di* (a marker for ordinal numbers), which inadvertently altered the connotation of the D/F adverbials provided. Placement of punctual time or punctual frequency adverbials was not one of the goals of this research.

e.g. 這次是第五次他給她打電話。

Zhei ci shi di wuci ta gei ta da dianhua.

This time be number five-time he give she call telephone.

"This was the fifth time that he called her."

b. Serial verb construction

This was not equivalent to verb reduplication because the same verb was not reduplicated. Instead, the subjects used two different verbs to govern the object complement and the D/F adverbial respectively and usually the D/F adverbial was inserted between these two verbs.

e.g. 林太太今天花了一整晚的時間洗衣服。

Lin taitai jintian hua-le yi zheng wan de shijian xi yifu.

Lin Mrs today use-ASP one whole night POSS time wash clothes.

"Mrs Lin used one whole night to do washing."

c. The *ba* construction

e.g. 她把衣服一整晚才洗好。

Ta ba yifu yi zheng wan cai xi hou.

She ba clothes one whole night then wash good.

"She used one whole night to do washing."

The occurrence of *ba* construction was very rare and therefore, insignificant.

d. Hard-to-interpret sentences

The whole sentences seemed not to make sense and hence, they were so

classified[11].

e.g. 不是一回她彈鋼琴。

Bu shi yihui ta tan gangqin.

Not be one-time she play piano.

他過一整天釣魚。

Ta guo yi zheng tian diao yu.

He pass one whole day fish fish.

這三個兒童喜歡半天看書。

Zhei sange ertong xihuan bantian kan shu.

These three child like half day read book.

Apart from the 7 categories mentioned above, there is the eighth 'Missing' category, which indicates that no response was given for a particular picture, and which, however, only accounts for a tiny portion of the total responses. This category is also reported, along with other categories, in the next section.

The analysis of the production data was based on the 8 structural categories listed above. The tokens of the same adverbial type would be grouped together. The responses to an adverbial type would be categorized and the mean by categories calculated. The ultimate score would be presented in percentage. This score could be interpreted as the likelihood of using a particular structure if the subject ever had to use an adverbial phrase in a sentence.

4.4.1.2 The results

The results of the placement of manner adverbials are summarized in Table 2:

[11] The English glosses are not provided for the following examples because the sentences are incomprehensible.

Table 2 The mean distribution of the total responses with manner adverbials in the production task

	Cat 1 (%) Preverbal	Cat 2 (%) Insertion	Cat 3 (%) Post-object	Cat 7 (%) Irrelevant	Missing (%)
GP 1	90	3.4	5	1.7	0
GP 2	98.3	0	0	0	1.7
Control	100	0	0	0	0

GP 2 learners and the Control subjects placed all the manner adverbials in preverbal positions and for GP 1 learners, there were only 2 responses where the manner adverbials were placed between verb and object (Category 2) and 3 responses where the manner adverbials were placed after object (Category 3). Therefore, on the whole, the preverbal position was the overwhelmingly dominant position for the placement of manner adverbials, regardless of the proficiency levels of the subjects.

The results of the placement of duration adverbials display in Table 3:

Table 3 The mean distribution of the total responses with duration adverbials in the production task

	Cat 1 (%) Preverbal	Cat 2 (%) Insertion	Cat 3 (%) post-object	Cat 4 (%) Dou Structure	Cat 5 (%) Verb Reduplica -tion	Cat 6 (%) Topic Structure	Cat 7 (%) Irrelevant	Missing (%)
GP 1	66.7	5	3.3	5	6.7	5	6.7	1.7
GP 2	25	31.7	5	3.4	25	0	6.7	3.4
Control	0	75	0	16.7	1.7	0	6.7	0

The placement pattern of the duration adverbial is more intricate. For GP 1 learners, preverbal placement was the predominant choice (66.65%). Each of the other placement possibilities accounted for less than 10 % of the total responses. Verb reduplication was the next most frequently employed structure though its occurring frequency could not be compared with that of preverbal adverbials. For GP 2 learners, the picture is rather fuzzy. 1 out of 4 responses (25%) fell into Cat. 1 (preverbal) and another quarter (25%) fell into Cat. 5 (verb reduplication). Cat. 2 (insertion) was the most frequently employed structure (31.7%) even though its occurring frequency was quite low compared with that of Control group. On the whole, GP 2 learners tended to place the duration adverbials preverbally and between verb and object, and they also used verb reduplication substantially.

For the Control group, Table 3 clearly shows that Cat. 2 (insertion) was the most frequently used structure for duration adverbials (75%), among others. Cat. 4 (*dou* construction) was in the second, accounting for about 16% of the total responses. No preverbal and postverbal placement pattern has been observed and the overall pattern looks very different from that of GP 2 learners, and more different from that of GP 1

learners. One noteworthy characteristic is that the Control subjects were less likely to use verb reduplication to accommodate duration adverbials. There was only 1 case out of the total responses. On the other hand, the Control subjects tended to use *dou* structures more often than the learners.

Table 4 summarizes the results of the frequency adverbials:

Table 4 The mean distribution of the total responses with frequency adverbials in the production task

	Cat 1 (%) Preverbal	Cat 2 (%) Insertion	Cat 3 (%) Post-object	Cat 4 (%) *Dou* Structure	Cat 5 (%) Verb Reduplica-tion	Cat 6 (%) Topic Structure	Cat 7 (%) Irrelevant	Missing (%)
GP 1	51.7	11.7	18.4	0	5	3.4	8.4	1.7
GP 2	13.4	40	11.7	0	16.7	6.7	8.3	3.4
Control	1.7	66.7	1.7	1.7	0	3.4	25	0

The picture is similar to Table 3. For GP 1 learners, preverbal placement (Cat. 1, 51.7%) was still the dominant construction, whereas post-object placement (Cat. 3, 18.4%) and insertion (Cat. 2, 11.7%) were the next two most frequent structures. For GP 2 learners, insertion (Cat. 2, 40%) became the dominant construction. Once again, in the placement of the duration adverbials, verb reduplication (Cat. 5, 16.7%) was the second most frequent construction, though preverbal placement (Cat. 1, 13.4%) and post-object placement (Cat. 3, 11.7%) accounted for a significant percentage of the total responses. It is interesting to note that the percentage of post-object placement (Cat. 3, 11.7%) by GP 2 was comparable to that by GP 1 (18.4%). For the Control group, insertion (Cat. 2, 66.7%) was the most prevailing construction among others. Cat. 7 (irrelevance, 25%) occupied a significant portion because some Control subjects consistently used serial verb constructions to accommodate frequency adverbials. For

Cat.1 (preverbal placement, 1.7%) and Cat. 3 (post-object placement, 1.7%), there was 1 case for each. Again, no Control subject used verb reduplication (Cat. 5), unlike many of GP 2 subjects.

In summary, the results of the production task show that the placement of the duration and frequency adverbials did not differ significantly if we made a comparison of them group by group and category by category. For GP 1, preverbal placement of D/F adverbials was dominant whereas for the other two groups, adverbial insertion was more frequently used, among other structures. For GP 2, along with adverbial insertion, the subjects also frequently used verb reduplication. There was also a significant portion of responses with preverbal placement of D/F adverbials. For the Control group, the *dou* construction was widely used to accommodate duration but not frequency adverbials. This might ascribe to the duration phrases given, like *yi zheng tian* (a whole day) and *yi zheng wan* (a whole night). These two phrases gave a strong connotation of definiteness and all the occurrences of *dou* construction were in fact from the sentences involving these two phrases. As for the manner adverbials, preverbal placement was obviously the most frequently used structure and little difference could be observed among the three groups.

4.4.2 The grammaticality judgment task

4.4.2.1 The scoring procedure

The sentence tokens of the same structures were grouped together for analysis. (See section 4.2.2) For example, the four tokens of preverbal placement of manner adverbials were grouped together and the four tokens of post-object placement of D/F adverbials were also collapsed together. A judgment for each token was equivalent to one response. There were five degrees of judgments. (See section 4.2.2) In order to find out the number of time a group of subjects to accept or reject a particular structure, we reduced the five degrees to three. The numeral category 1, representing totally acceptable, and 2, quite acceptable, would be combined into one larger category namely 'generally acceptable' (henceforth acceptable). This new category denoted an acceptable judgment for a specific sentence. The numeral category 4, labeled *quite unacceptable*, and 5, *totally unacceptable*, would be combined into another new

category namely 'generally unacceptable' (henceforth unacceptable). The new category referred to an unacceptable judgment for a specific sentence. The numeral character 3 'no opinion' alone was considered as an independent category in this scoring system. It stood for an uncertain judgment of acceptability for a sentence. Therefore, if the subject was unable to make a decision on the acceptability of a sentence, or she was not sure whether she understood the sentence well, she was advised to circle 3. This was designed to prevent the subjects from randomly taking other options when they were unable to decide.[12] Thus we now had three new categories: *acceptable*, *no opinion*, and *unacceptable*. The original different degrees of acceptability were intended to give the subjects a gradient of judgment, so as possibly to reduce a significant amount of responses falling into the 'no opinion' category when the subjects were uncertain of a sentence's absolute (un)grammaticality.

Under this scoring system, each judgment for a token of a specific structure would account for a percentage of acceptability of that structure. For example, there were four tokens of DFVO. If a subject found three tokens acceptable and one token unacceptable, her score on DFVO would be 75% of acceptance. This score would be averaged group by group and the ultimate scores presented below were the mean scores of each structure by each group. Repeated measures ANOVAs of these test scores were run. Where significant differences between mean scores were recorded, the strictest post-hoc Scheffe procedures were used to establish the source of these differences. A significance level of 0.05 is assumed throughout.

This study adopts a stringent scoring procedure. As the subjects were asked to circle the problematic part of the sentence which led them to give an unacceptable judgment, it was possible that some did not correctly identify the target problem of the sentence even giving the target judgment. For example, the problematic element was the placement of D/F adverbials but the subject circled *dou* in the sentence and gave, say, value 5 (totally unacceptable). Another possibility was that the sentence was

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[12] The 'no opinion' category generally accounts for an insignificant portion of the total responses. That means the subjects were quite sure of their decisions. However, the 'no opinion' rates for some structures are quite high. Unless a high rate was recorded, the percentage for this category will not be reported in the next section.

correct but the learner gave an unacceptable judgment due to some other reason. If these did occur, the judgment for these tokens would not be taken into account for the unacceptability of the structure concerned. Rather, this type of judgment would be separated out from others. In this research, it was lumped into the category 'Missing' as it is analogous to the situation that the subject has not given a judgment for a test sentence. Table 5 summarizes the percentages of the 'Missing' category by each group.

Table 5 The mean percentage of 'Missing' out of total responses by each group

	Percentages of 'Missing'
GP 1	8.2
GP 2	4
Control	3.5

The mean 'Missing' rate of three groups was 5.2%. A word of reminder is that this Category of 'Missing' might come from the unavailability of any judgment for a test sentence or a correct or incorrect judgment based on wrong reasons. The former cause, however, accounted for an insignificant portion of this category. Therefore, it can be assumed that the 'Missing' category mainly came from misidentification of the cause for the unacceptability of a sentence.

The findings of the experiments are presented in the next section. It should be reminded, however, that the acceptance rate and the rejection rate of each structure do not add up to 100%, since there is a category 'no opinion' (value 3 in the scoring system) and a category 'Missing'. If the 'no opinion' and 'Missing' rates are unusually high for a particular structure, it will be highlighted. Otherwise, the 'Missing' rate of that structure should be assumed to be around the mean group rate reported in Table 5 and the 'no opinion' rate around zero.

4.4.2.2 The results

The grammaticality judgment task can be divided into four sections. They are the placement of manner adverbials, the placement of D/F adverbials, the placement of other adverbials (NP, PP and AdvP), and lastly, the placement of a co-occurring pair of manner and D/F adverbial. The results of each section will be presented below.

4.4.2.2.1 The placement of manner adverbials

For preverbal placement of manner adverbials (MVO), all three groups show a high percentage of acceptance. Table 6 summarizes the mean acceptance and rejection rates of preverbal manner adverbials by each group.

Table 6 The mean acceptance and rejection rates of MVO

	Mean acceptance rate (%)	Mean rejection rate (%)
GP 1	75	13.3
GP 2	90	1.7
GP 3	93.3	0

ANOVA reveals that the differences of the mean MVO acceptance rates are insignificant ($F = 2.63$, $p = 0.84$) but of the mean MVO rejection rates, the differences are significant ($F = 3.63$, $p = 0.04$). Post-hoc Scheffe test ($p < 0.05$), however, is unable to indicate the rejection rates of which two groups differ significantly. Therefore, preverbal placement of manner adverbials was generally accepted by both levels of learners, as well as the Control subjects.

The three groups, however, showed some differences in their acceptance of VMO (insertion of manner adverbials between verb and object). GP 1 exhibited a comparatively low rejection rate and in turn, a comparatively high acceptance rate of VMO. Table 7 summarizes the mean acceptance and rejection rates of inserted manner adverbials.

Table 7 The mean acceptance and rejection rates of VMO

	Mean acceptance rate (%)	Mean rejection rate (%)
GP 1	25	65
GP 2	5	91.7
Control	1.7	98.3

The results of ANOVA reveal a significant differences for the acceptance rates ($F = 5.12$, $p = 0.01$) as well as the rejection rates ($F = 6.29$, $p = 0.0041$). Post-hoc Scheffe test ($p < 0.05$) shows that the acceptance rates of VMO by GP 1 and Control group are significantly different. In the light of the rejection rates, GP 1 is significantly different from both GP 2 and Control group. Hence the results of VMO show that GP 1 learners and the Controls (or even GP 2 learners) gave different judgments to inserted manner adverbials, even though all three groups consistently accepted preverbal manner adverbials.

For the post-object placement of manner adverbials (VOM), the three groups showed some but non-distinctive differences in their judgments. All of them tended to reject this category.

Table 8 The mean acceptance and rejection rates of VOM

	Mean acceptance rate (%)	Mean rejection rate (%)
GP 1	18.3	75
GP 2	1.7	95
GP 3	8.3	90

Both the differences of the acceptance rates ($F = 3.69$, $p = 0.03$) and the rejection rates ($F = 3.41$, $p = 0.42$) are significant. However, post-hoc Scheffe test ($p < 0.05$) fails to identify the source of effect of the latter, even though it shows that the acceptance rates of VOM by GP 1 and GP 2 differ significantly.

On the whole, the three groups had similar acceptance rates for MVO and similar rejection rates for VOM but somewhat different acceptance and rejection rates for VMO. GP 1 learners tended to accept VMO more often than the Control group, and the corollary was that they tended to reject it less often than the Control group (in fact, also than GP 2); both the Control group and GP 2 learners did not hesitate in rejecting VMO. Table 9 and 10 summarize the overall results of the placement of manner adverbials.

Table 9 The mean acceptance rates of MVO, VMO, and VOM

	MVO	VMO	VOM
GP 1	75	25	18.3
GP 2	90	5	1.7
Control	93.3	1.7	8.3

Table 10 The mean rejection rates of MVO, VMO, and VOM

	MVO	VMO	VOM
GP 1	13.3	65	75
GP 2	1.7	91.7	95
Control	0	98.3	90

4.4.2.2.2 The placement of D/F adverbials

The judgments for the placement of D/F adverbials varied more significantly. Table 11 shows the mean acceptance and rejection rates of preverbal placement of D/F adverbials (DFVO)[13].

Table 11 The mean acceptance and rejection rates of DFVO

	Mean acceptance rate (%)	Mean rejection rate (%)
GP 1	63.3	20
GP 2	35	63.3
Control	20	78.3

Both the acceptance rates ($F = 8.17$, $p = 0.0010$) and the rejection rates ($F = 13.63$, $p = 0.0000$) differ significantly. Post-hoc Scheffe test ($p < 0.05$) indicates that with regard to both the acceptance and rejection rates, GP 1 is significantly different from GP 2 and Control group. The results then suggest that GP 1 learners tended to accept DFVO, along with MVO, both are preverbal adverbial patterns.

The judgments for the inserted D/F adverbials (VDFO) show that GP 1 learners did not accept VDFO as readily as DFVO.

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[13] The acceptance rate of DFVO by the Control group may be unexpectedly high (up to 20 %). We think that might be caused by the possible preverbal placement of D/F adverbials when they are emphasized, as shown in (i), although the word order is more marked:

(i) 他三次來看我，但我都不在家。
Ta sanci lai kan wo, dan wo dou bu zai jia.
He three-time come see me, but I dou not at home.
"He came to see me three times, but each time I was not at home."

Table 12 The mean acceptance and rejection rates of VDFO

	Mean acceptance rate (%)	Mean rejection rate (%)
GP 1	41.7	43.3
GP 2	75	13.3
Control	95	1.7

The results of ANOVA show that there is a significant differences in the acceptance rates ($F = 18.41$, $p = 0.0000$) as well as the rejection rates ($F = 10.21$, $p = 0.0002$). Post-hoc Scheffe test ($p < 0.05$) reveals that for both acceptance and rejection rates, GP 1 differs significantly from GP 2 and Control group.

Table 11 and Table 12 show that GP 1 learners generally accepted DFVO and marginally accepted VDFO. Pair-T test confirms that there is a significant difference between the two acceptance rates of DFVO and VDFO by GP 1 learners. ($t = 2.4140$, $p < 0.05$) Hence we can conclude that the preverbal position was preferred by GP 1 learners for D/F adverbials but on the other hand, adverbial insertion, that is, VDFO was not completely rejected.

The post-object placement of D/F adverbials (VODF) is problematic as the definiteness effects might interfere with the judgments for this category. Even the Control group did not yield unanimous judgments for this category and the results by Control group suggest that VODF was more acceptable than DFVO but less acceptable than VDFO.

Table 13 The mean acceptance and rejection rates of VODF

	Mean acceptance rate (%)	Mean rejection rate (%)
GP 1	26.7	45
GP 2	15	75
Control	36.7	61.7

ANOVA indicates no significant differences in both the acceptance rates ($F = 1.97$, $p = 0.15$) and the rejection rates ($F = 3.16$, $p = 0.0528$) The rejection rates, however, show that GP 2 learners had a greater tendency than the Control group to reject this category. Table 14 and 15 summarize the three groups' performance on different placement patterns of D/F adverbials.

Table 14 The mean acceptance rates of DFVO, VDFO, and VODF

	DFVO	VDFO	VODF
GP 1	63.3	41.7	26.7
GP 2	35	75	15
Control	20	95	36.7

Table 15 The mean rejection rates of DFVO, VDFO, and VODF

	DFVO	VDFO	VODF
GP 1	20	43.3	45
GP 2	63.3	13.3	75
Control	78.3	1.7	61.7

One outstanding feature that characterizes GP 1's judgments for different D/F adverbial placement patterns is the comparatively high rates of 'no opinion'. If one adds up the respective acceptance and rejection rates of DFVO, VDFO and VODF by GP 1, one would instantly find that they are quite distant from 100%. The 'no opinion' rates of the three placement patterns by GP 1 are 8.3%, 6.7% and 13.3% respectively. Thus, the 'no opinion' rates are in fact quite high, especially for VODF. This indirectly suggests that GP 1 learners were not very sure when judging different placement patterns of D/F adverbials, especially the post-object D/F adverbials.

Now we make cross-categorical comparison with the same placement position. Fig. 1 and Fig. 2 summarize the results of preverbal adverbial placement and adverbial intervention respectively.

Fig. 1 The mean acceptance rates of MVO and DFVO

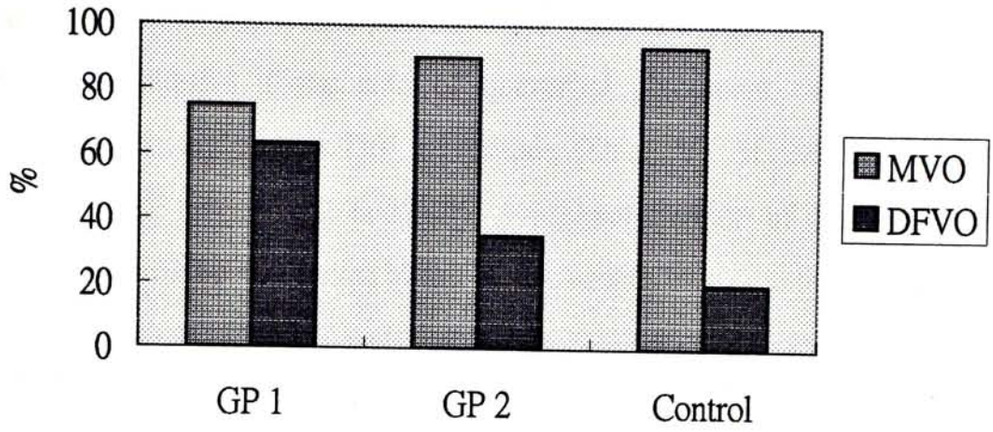


Fig. 2 The mean acceptance rates of VMO and VDFO

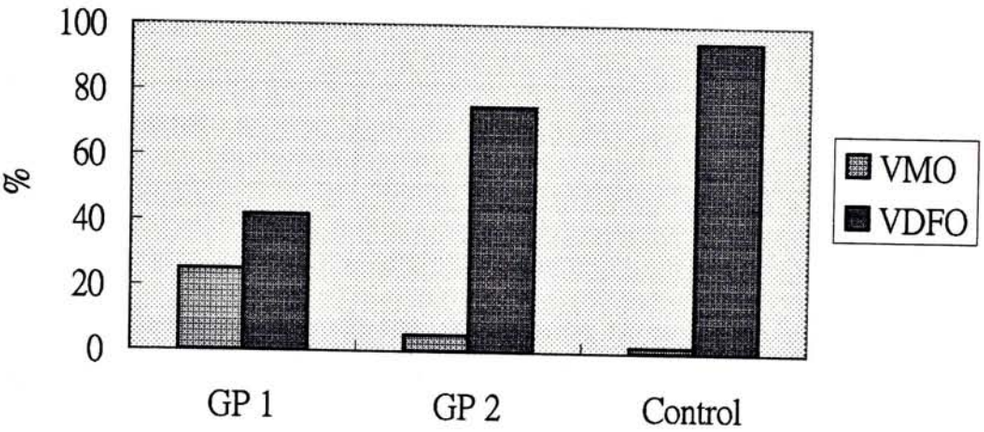


Fig. 1 and 2 show that GP 1 learners had similar judgments for the placement of manner and D/F adverbials. Pair-T test also confirms that GP 1 learners treated these two adverbial types with regard to different placement patterns similarly. ($t = 1.1009$, $p > 0.05$ for MVO and DFVO, and $t = 1.2826$, $p > 0.05$ for VMO and VDFO) To sum up, GP 1 learners tended to accept preverbal placement of the manner and the D/F adverbials, while marginally accept insertion of the two types of adverbials between verb and object, and reject their post-object placement. To GP 2 learners and the Control group, only preverbal placement of manner adverbials was allowed. Insertion of D/F adverbials was more preferred than other placement possibilities. One difference between the two groups is GP 2 learners preferred preverbal placement more often than post-object placement of D/F adverbials, whereas the Control group found post-object placement of D/F adverbials more preferable than preverbal placement.

So far we have looked at different placement patterns of D/F adverbials in a sentence. These D/F adverbials are adjuncts and their omission will not affect the grammaticality of the whole sentence. As there is a high acceptance rate of DFVO, it would be doubtful if the rule of preverbal placement of D/F adverbials will be generalized to obligatory D/F adverbials ($DF_{OBL}V$). If the learner also placed the obligatory D/F adverbial preverbally, overgeneralization of preverbal placement to all adverbials could be confirmed in the IL grammar.

Table 16 The mean acceptance and rejection rates of $DF_{OBL}V$

	Mean acceptance rate (%)	Mean rejection rate (%)
GP 1	45	31.7
GP 2	18.3	80
Control	11.7	83.3

The differences of both the acceptance rates ($F = 5.69$, $p = 0.0065$) and the rejection rates ($F = 12.27$, $p = 0.0001$) are significant. Post-hoc Scheffe test ($p < 0.05$) shows that GP 1 differs significantly from GP 2 and Control group on both the acceptance and rejection rates of $DF_{OBL}V$. Therefore, GP 1 learners probably generalized preverbal placement to all adverbials, even though when the adverbials carried the grammatical role as complement to verbs.

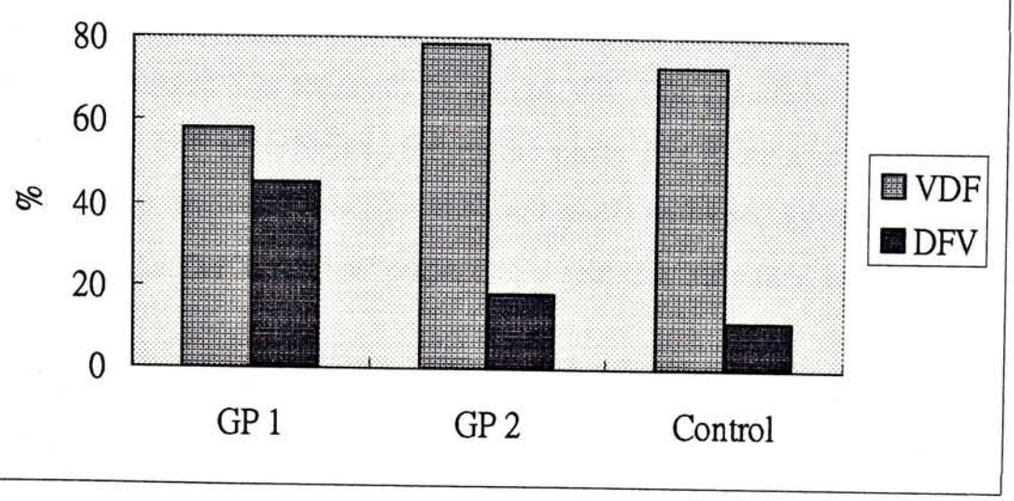
The corresponding grammatical structure of $DF_{OBL}V$ is VDF_{OBL} (post-verbal placement of obligatory D/F adverbials). Table 17 summarizes the results of VDF_{OBL}.

Table 17 The mean acceptance and rejection rates of VDF_{OBL}

	Mean acceptance rate (%)	Mean rejection rate (%)
GP 1	58.3	10
GP 2	78.3	6.7
Control	73.3	3.3

From Table 17, it is hard to deny that GP 1 learners indeed showed some sensitivity to the grammatical role of D/F adverbials. The results of ANOVA suggests no significant difference in both the acceptance rates ($F = 2.28$, $p = 0.12$) and the rejection rates ($F = 0.79$, $p = 0.46$). However, Pair-T test also shows that the acceptance rates of VDF_{OBL} and $DF_{OBL}V$ by GP 1 are also not significantly different ($t = 1.2929$, $p > 0.05$). Thus, all in all, though GP 1 learners showed a higher acceptance rate of VDF_{OBL}, they obviously also generalized preverbal placement to all adverbials, even when the adverbial functioned as a verbal complement in the sentence. Fig. 3 summarizes the mean acceptable rates of VDF_{OBL} and $DF_{OBL}V$.

Fig. 3 The mean acceptance rates of VDF_{OBL} and $DF_{OBL}V$



One reminder about the placement of VDF_{OBL} is that the mean 'Missing' rate of

this category is as high as 19.4%[14], about 4 times higher than the mean 'Missing' rate of all items in the grammaticality judgment task. This is partly because the subjects ascribed the ungrammaticality of a sentence to the topicalized object. (Many of them circled the topicalized object.) A topic structure would be more natural if an appropriate context has been created. Therefore, pragmatics, rather than syntax, may affect the judgment. When it comes to $DF_{OBL}V$, the 'Missing' rate (5%) instantly drops to the mean level (5.2%). This may be because the preverbal placement of D/F adverbials was so out of place to some subjects that they circled this part instantly without taking other things into consideration.

If the learners intended to avoid inserting D/F adverbials into the verb phrase with object complement, they might use verb reduplication (VV). However, VV involves a more complicated structure as the verb needs to be reduplicated to govern the object and the D/F adverbial respectively. GP 2 learners found VV very acceptable (90%), a rate even higher than that of Control group. This is also evident in the production task (See Section 5.4.1.2). The Controls also accepted VV to a large extent but nevertheless, stylistically they might find it too clumsy to use if the object or the D/F adverbials were not 'heavy' enough. In other words, VV is more readily used only when the object and/or the D/F adverbial are complex noun phrases and are composed of a number of syllables[15], for example, *Ta kan Meiguo lanqiu sai kanle liangge duo xiaoshi*. (He watched the American basketball game for two hours.) In this sentence, both the object *Meiguo lanqiu sai* (American basketball game) and the duration adverbial *liangge duo xiaoshi* (more than two hours) are regarded to be consisted of many syllables and therefore, both of them are better to be individually governed by a verb. In contrast, GP 1 learners showed less tendency to accept VV. One plausible explanation is that they did not allow D/F adverbials to follow the verbs. But it can also be argued that VV is a more complex structure, because the verb needs to be reduplicated to 'look after' the object and the D/F adverbial respectively and this structure is not found in English.

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[14] The 'Missing' rates of VDF_{OBL} for all three groups are 21.7% (GP 1), 13.3% (GP 2), and 23.3% (Control).

[15] The number of syllables that is considered abundant enough to use VV is debatable. More accurately, it depends more on individual habits of language use, even though the tendency that the more clumsy the postverbal elements are, the more likely VV is used still holds in general.

Compared with verb reduplication, the insertion of an adverbial into the SVO structure is far easier to understand and acquire. Consequently, positive evidence may not be registered at the initial stage of learning. Nevertheless, the acceptance or rejection of VV might not be due to postverbal placement of D/F adverbials. Many other factors could affect the subjects' judgments. Table 18 summarizes the results of VV.

Table 18 The mean acceptance and rejection rates of VV

	Mean acceptance rate (%)	Mean rejection rate (%)
GP 1	51.7	26.7
GP 2	90	5
Control	76.7	8.3

There is significant difference in both the acceptance rates ($F = 7.41$, $p = 0.0017$) and the rejection rates ($F = 5.15$, $p = 0.01$). Post-hoc Scheffe test ($p < 0.05$) shows that GP 1 and GP 2 are significantly different ($p < 0.05$), but GP 1 and Control group are not.

4.4.2.2.3 The placement of other adverbials

The results reported so far suggest that GP 1 learners overgeneralized preverbal placement to D/F adverbials, and allowed manner adverbial intervention, both of which are non-target structures that need to be unlearned. Nevertheless, they seemed to have acquired the linguistic knowledge that adverbials cannot be placed in post-object position. In this subsection, we further look into the results of placement of other adverbials. These adverbials can be classified into three types, namely, NP adverbials e.g. *mingtian* (tomorrow), PP adverbials e.g. *zai jia li*(at home), and AdvP adverbial e.g. *changchang* (always). The NP adverbials and the AdvP adverbials are usually classified as sentence adverbials, which are unlike manner adverbials, though of AdvP type, are considered as VP adverbials. Syntactically, the NP adverbials occur in sentence initial position, as well as in pre-modal position, and the AdvP adverbials

occur in pre-modal position. It, however, is difficult to classify the PP adverbials and their scope seems to depend on their linear order with modals. The one preceding the other on surface structure will have wider scope.

(1) a. 他可以在圖書館看書。

Ta keyi zai tushuguan kan shu.

He can at library read book.

"He can read in the library (because he is permitted to do so)."

b. 他在圖書館可以看書。

Ta zai tushuguan keyi kan shu.

He at library can read book.

"He can read in the library (because it is quiet)."

In (1a), *keyi* (can) has a wider scope over *zai tushuguan* (in the library) whereas in (1b), *keyi* is inside the scope of *zai tushuguan*.

The PP adverbial can also alter its place with the manner adverbial but unexpectedly, the meaning of the sentence remains unchanged in spite of their exchange of place. Compare (2a) with (2b):

(2) a. 他從南方慢慢地走來。

Ta cong nanfang manman-de zuo lai.

He from south slow-ADV walk come.

"He walks to this direction from the south."

b. 他慢慢地從南方走來。

Ta manman-de cong nanfang zuo lai.

He slow-ADV from south walk come.

"He walks to this direction from the south."

Cong nan fong (from south) precedes *manmande* (slowly) in (2a) but follows *manmande* in (2b). However, this alternation of adverbial placement does not affect the meaning of (2a) and (2b) at all.

But we need not go into the details of this complication as the classification of an adverbial to a sentence or VP adverbial is not essential here. The main question is whether the learners would regard these two adverbial types as distinctive types of adverbials, or would they collapse them together and give them a unique placement position, like the preverbal position given to the manner adverbials. If the learners treated all of them alike, it could be evident that in the learners' IL grammar, adverbials were uniformly placed only preverbally.

Table19 The mean acceptance rates of $PP_{ADV}VO$ and mean rejection rates of $VOPP_{ADV}$

	Mean acceptance rate of $PP_{ADV}VO$ (%)	Mean rejection rate of $VOPP_{ADV}$ (%)
GP 1	86.7	83.3
GP 2	96.7	90
Control	100	76.7

Table 20 The mean acceptance rates of AVO and mean rejection rates of VOA

	Mean acceptance rate of AVO (%)	Mean rejection rate of VOA (%)
GP 1	76.7	83.3
GP 2	100	86.7
Control	100	80

Table 21 The mean acceptance rates of $NP_{ADV}VO$ and mean rejection rates of $VONP_{ADV}$

	Mean acceptance rate of $NP_{ADV}VO$	Mean rejection rate of $VONP_{ADV}$
GP 1	86.7	80
GP 2	93.3	90
Control	100	86.7

ANOVO reveals that significant differences are identified only in the acceptance rates of AVO ($F = 12.25$, $p = 0.0001$). Post-hoc Scheffe test shows ($p < 0.05$) GP 1 differs significantly from the other two groups. Apart from that, no two groups differs significantly in their judgments for the different placement patterns of the above three types of adverbials. Therefore, generally speaking, it is quite clear that all subjects collapsed manner adverbials with other adverbial types and allowed them to occur only in preverbal positions. But for D/F adverbials, GP 2 and Control group responded in a different way from GP 1. GP 2 and Control group obviously preferred insertion but GP 1 preferred preverbal placement. (See Table 15) Therefore, we can come to the conclusion that GP 1 learners did not treat different types of adverbials very differently. They preferred to place all adverbials preverbally. But for GP 2 learners, D/F adverbials were obviously assigned a different placement position. While all other adverbials were generally placed preverbally, D/F adverbials were preferred between verb and object.

Unfortunately no insertion of NP adverbials, PP adverbials and AdvP adverbials had been included in the grammaticality judgment task and we cannot see whether the subjects would, like the manner adverbials, allow adverbial insertion of these three types.

4.4.2.2.4 The co-occurrence of manner and D/F adverbials

The co-occurrence of the two types of adverbials in a sentence was purported to examine if there was a sequence of adverbial adjunction in the IL . In other words, whether the learners adjoined manner adverbials before D/F adverbials, resulting in the surface order of DFMVO. Or, to the contrary, D/F adverbials were adjoined to verb phrase before manner adverbials, resulting in MDFVO, the reverse order of DFMVO. In the results reported below, some structures, including VOMDF, VODFM and DFVOM, were rejected most probably because of the general prohibition of postverbal placement of manner adverbials. Consequently, the occurring sequence of these two types of adverbials in these structures may become irrelevant to their grammaticality. We therefore can only investigate the preference of occurrence sequence of adverbials from the results of MDFVO and DFMVO.

The preverbal sequence of manner and D/F adverbials will be investigated first. Table 22 summarizes the mean acceptance and the mean rejection rates of MDFVO.

Table 22 The mean acceptance and rejection rates of MDFVO

	Mean acceptance rate (%)	Mean rejection rate (%)
GP 1	33.3	53.3
GP 2	16.7	83.3
Control	13.3	80

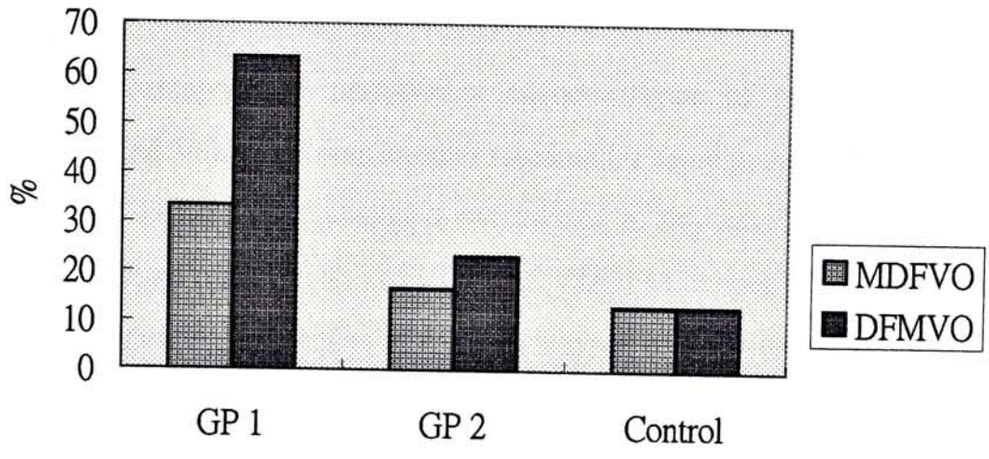
ANOVA indicates that the acceptances rates do not differ significantly ($F = 1.85$, $p = 0.17$) but the rejection rates do ($F = 3.81$, $p = 0.03$). Post-hoc Scheffe test ($p < 0.05$), however, fails to indicate the source of this effect. The counterpart of MDFVO is DFMVO and the results, however, show quite a different picture.

Table 23 The mean acceptance and rejection rates of DFMVO

	Mean acceptance rate (%)	Mean rejection rate (%)
GP 1	63.3	30
GP 2	23.3	73.3
Control	13.3	83.3

Fig. 4 summarizes the acceptance rates of MDFVO and DFMVO.

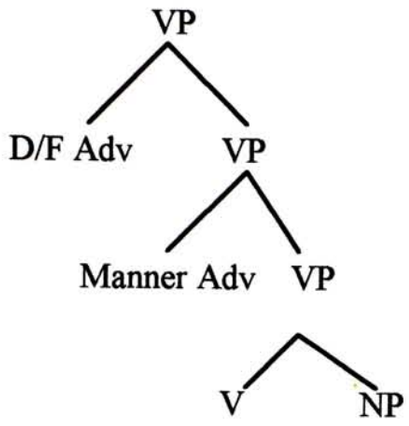
Fig. 4 The mean acceptance rates of MDFVO and DFMVO



The results of ANOVA reveal significant differences in both the acceptance rates ($F = 10.02$, $p = 0.0003$) and the rejection rates of DFMVO ($F = 10.85$, $p = 0.0002$). Post-hoc Scheffe test ($p<0.05$) shows that both the acceptance and the rejection rates by GP 1 are significantly different from the other two groups. Using Pair-T test to compare the acceptance rates of MDFVO and DFMVO by GP 1, we found that their difference is significant. ($t = 2.1558$, $p < 0.05$) Thus, in GP1 learners' IL grammar, there is an adjunction order of these two types of adverbials. The manner adverbial seemed to be adjoined to verb phrase prior to the D/F adverbial. This adjunction

process is illustrated in (3)[16].

(3)



This adverbial adjunction process resulted in the D/F adverbial being located at the 'outer' layer of the verb phrase. Both GP 2 and Control subjects rejected either MDFVO or DFMVO though GP 2 learners showed a higher acceptance rate and lower rejection rate of DFMVO.

The corresponding post-object co-occurrence of manner and D/F adverbials (VOMDF and VODFM) was equally rejected by three groups. This was most probably due to the rejection of post-object occurrence of any adverbials, especially the manner adverbials. As a result, both VOMDF and VODFM cannot really tap the knowledge for different occurring sequences of these two types of adverbial phrases.

Table 24 The mean rejection rates of VOMDF

	Mean rejection rate (%)
GP 1	83.3
GP 2	100
Control	96.7

[16] In (3), it is the VP which recurs for adverbial adjunction but in fact, there is no preference for recursive VP over recursive V'. Either option will not affect the overall analysis.

Table 25 The mean rejection rates of VODFM

	Mean rejection rate (%)
GP 1	83.3
GP 2	100
Control	100

ANOVA indicates no significant difference in the rejection rates of both VOMDF ($F = 3.13$, $p = 0.0542$) and VODFM ($F = 3.18$, $p = 0.0517$).

Another pair of structures is MVODF and DFVOM. They were devised to test if the learners allowed unrestrained adjunction of the manner and the D/F adverbials at preverbal and post-object positions. The results of MVODF are similar to those of VODF. That means preverbal placement of manner adverbials were innocuously accepted by the learners. Their disagreement only fell on whether post-object placement of D/F adverbials should be allowed. Table 26 presents the rejection rates of MVODF and VODF.

Table 26 The mean rejection rates of MVODF and VODF.

	MVODF	VODF
GP 1	47.8	45
GP 2	65	75
Control	51.7	61.7

GP1 showed a greater consistency towards the judgment for post-object placement of D/F adverbials. GP 2 and Control group tended to reject VODF more

often than MVODF, though it is undeniable that the difference is mild.

All three groups of subjects rejected DFVOM but GP 2 and Control group showed a higher rejection rate.

Table 27 The mean rejection rates of DFVOM

	Mean rejection rate (%)
GP 1	80.6
GP 2	98.3
Control	98.3

ANOVA reveals a significant difference in the rejection rates ($F = 7.13$. $p = 0.0022$). Post-hoc Scheffe test ($p<0.05$) shows that GP 1 is significantly different from GP 2 and Control group. Table 27 in fact simulates Table 8, which summarizes the results for VOM. Table 28 presents the mean rejection rates of both DFVOM and VOM.

Table 28 The mean rejection rates of DFVOM and VOM

	DFVOM	VOM
GP 1	80.6	75
GP 2	98.3	95
Control	98.3	90

Table 28 confirms that when the manner adverbial occurred in post-object position, the whole sentence was likely to be rejected. Only when the manner adverbial was placed in preverbal position would the subjects consider where the D/F adverbials should be placed (compare Table 22, 23, 26). Thus, we can conclude that preverbal

placement of manner adverbials was secure in the IL grammar of both groups of learners. The discrepancy between two groups of learners fell on the placement of D/F adverbials. GP 1 learners tended to place D/F adverbials preverbally but GP 2 learners preferred to insert them between verb and object.

Lastly, MVDFO was designed to see if the learners knew the correct structure of co-occurrence of manner and D/F adverbials, and in addition, if the learners had different grammars for duration and frequency adverbials. Table 29 compare the results of MVDFO and VDFO.

Table 29 The mean acceptance rates of MVDFO and VDFO

	MVDFO(%)	VDFO(%)
GP 1	46.7	41.7
GP 2	65.8	75
Control	87.5	95

ANOVA indicates a significant difference in the acceptance rates of MVDFO ($F = 11.87$, $p = 0.0001$). Similar to the results of VDFO, post-hoc Scheffe test ($p<0.05$) shows that GP 1's judgments for MVDFO is significantly different from those of GP 2 and Control group.

D/F adverbials can be further divided into two types. They are the duration and the frequency adverbials. Table 30 is a summary of their mean acceptance rates in preverbal and insertion position.

Table 30 The mean acceptance rates of duration and frequency adverbials in MVDFO, DFVO and VDFO[17]

	DVO	FVO	VDO	VFO	MVDO	MVFO
GP 1	73.3	53.3	33.3	50	43.3	50
GP 2	30	40	63.3	86.7	76.7	55
Control	20	20	96.7	93.3	95	80

From Table 30, it is hard to tell whether there is a real difference in the judgments for the placement patterns of duration and frequency adverbials. The Control subjects showed little difference in their judgments over different placement patterns of the two types of adverbials but both groups of learners appeared to be inconsistent in some instances. Nevertheless, as there is insufficient evidence to support the hypothesis that the subjects judged the duration and frequency adverbials differently, we had better treat them as a category.

To summarize, preverbal placement of manner adverbials has been proved to be the most preferable option by all three groups. Surprisingly, VMO was not considered to be totally unacceptable by GP 1 learners; there was a significant portion of acceptable judgments given by GP1 learners. In contrast, post-object placement of manner adverbials was overwhelmingly rejected by all three groups.

The placement of D/F adverbials shows a rather complicated picture. While preverbal placement of D/F adverbials was considered generally unacceptable by GP 2 learners and the Control group, it was considered to be the best option by GP 1 learners.

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[17] The mean 'Missing' rate of MVFO is as high as 15.6%, about 3 times higher than the mean 'Missing' rate of all items.

The GP 1 learners even overgeneralized the preverbal placement to the obligatory D/F adverbials. However, though DFVO was preferred by GP 1 learners, they did not find VDFO unacceptable. About half of GP 1's responses on VDFO by GP 1 fell into the acceptable category. GP 2 and Control group, nevertheless, found D/F adverbial insertion the most acceptable option. The judgments for VODF are problematic because we do not know whether the definiteness effects may affect the subjects' judgments This will be discussed in more detail in the next chapter.

One major finding is that to GP 1 learners, there is an adjunction order of manner and D/F adverbials. As both types of adverbials were found more acceptable in preverbal positions, GP 1 learners seemed to adjoin the manner adverbial to the verb phrase first, followed by the D/F adverbial.

The overall results show that GP 2 learners were very successful in learning adverbial placement as no significant difference from Control group was observed in every category. In the next section, we will look into individual learners' performance. We found that a handful of GP 2 learners was not very successful in acquiring D/F adverbial placement. We will also look into the extent to which the individual results match with the overall results.

4.4.3 Individual learners' performance

In this section, we look into the experimental results of individual learners, combining and comparing the results of both tasks. The production task reveals the performance whereas the grammaticality judgment task indicates the competence of each individual.

4.4.3.1 GP 1 learners

GP 1 learners generally showed a high degree of inconsistency in the whole experiment, especially in the grammaticality judgment task and this might impute to IL variability at an early stage of learning a language. In the production task, preverbal placement of all types of adverbials was the dominant structure. Apart from that, adverbial insertion between verb and object and post-object adverbial placement were also found. The results of the grammaticality judgment task were even less uniform.

Many learners showed a high degree of inconsistency, especially in the judgment for the placement of D/F adverbials. Rarely could one find a uniform judgment pattern for one adverbial placement pattern by a GP 1 learner, and especially when it came to VDFO, nearly none of them showed a consistent judgment pattern. 50% of acceptance and 50% of rejection was a common phenomenon. In the following, GP 1 learners' performance on the placement of manner adverbials will be discussed first. It then will be followed by the discussion of the placement of D/F adverbials and the co-occurrence of both types of adverbials.

In the production task, all except two learners consistently placed all the manner adverbials preverbally. This is also shown in Section 4.4.1.2 that MVO was the most frequently produced pattern, among others. One learner, however, produced two MVO sentences and two VMO sentences, out of four tokens of manner adverbials. This was in fact consistent with his judgments in grammaticality judgment task as he accepted MVO at 50% and VMO at 75%. One learner, on the other hand, produced 1 MVO sentence and 3 VOM sentences. In the grammaticality judgment task, she also accepted VOM (75%) but had the tendency to reject MVO (50% of rejection and 25% of 'no opinion').

The pattern of the grammaticality judgment task was less neat. MVO was generally accepted by all learners. The acceptance rate was up to 75% or above for each learner, as expected. However, there were three exceptions and two of them had the acceptance rate of MVO at 50% or below. Another learner, however, was inconsistent in his performance in the production and the grammaticality judgment task. In the production task, he placed all manner adverbials preverbally but in the grammaticality judgment task, he totally rejected MVO, but accepted VMO and VOM (both 75% of time). But inconsistent performance in the two tasks was not uncommon. As we move on, we will see some more cases, though inconsistency did not occur randomly; inconsistency might occur in some sentence patterns but not others.

In the grammaticality judgment task, 5 subjects accepted VMO at least 50% of the time but only one produced VMO in the production task[18]. For others, the acceptance

[18] Note that the production task could only elicit the most preferred option, among other grammatical

rate of VMO was 25% or below. Hence, GP 1 learners did not generally find VMO acceptable though it did exist in some learners' grammar, and indeed the individual rejection rate of VMO was not comparable to that of GP 2 and Control subjects. Most of GP 2 learners and Control subjects did not produce or accept VMO at all.

GP 1 learners tended to find VOM unacceptable, as shown in the overall results in Section 4.4. All but two learners accepted this placement pattern at a rate as low as 25% or below of the time. Those two learners, however, accepted 3 out of 4 tokens of VOM and also accepted VMO at the same rate even though they did not accept MVO at all. Nevertheless, VOM seemed to be overwhelmingly rejected by all GP 1 learners.

To summarize, GP 1 learners found preverbal placement of manner adverbials most preferable and this was shown in both the production and the grammaticality judgment tasks. However, to a handful of learners, VMO was also acceptable though this structure rarely showed up in the production task. VOM is the mostly rejected option and only one learner produced it in the production task.

Individual learners' performance on the placement of D/F adverbials was even more inconsistent, regardless of in the production task or in the grammaticality judgment task. In the production task, all but one learner produced at least one DFVO sentence. That learner produced none because she made 5 topic sentences, out of the total 8 tokens of D/F adverbials. Apart from DFVO, VDFO and VODF also frequently occurred. Usually the learners must produce some DFVO sentences and in addition, they either produced VDFO or VODF, but rarely both. Only one learner produced one VDFO sentence and one VODF sentence. Besides this, verb reduplication sometimes occurred but *dou* construction and topicalization rarely showed up in the production task. All this may imply that GP 1 learners' IL grammar was still at the elementary stage and the simplest way to deal with D/F adverbials was to directly insert them into the given verb phrases, without additionally making any amends for the phrases.

As DFVO was the most frequently produced structure in the production task, it is predicted that the learners might also accept this structure in the grammaticality judgment task. This indeed is the case. All GP 1 learners accepted DFVO at 50% of

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options, if there are any. See Section 4.5 for discussion.

time or above, even though inconsistency was a common feature in the overall judgments. For D/F adverbial insertion, if the learner produced VDFO in the production task, he must also accept it at 50% of time or above. But on the other hand, if the learner produced VODF in the production task, it did not logically imply its acceptance by that learner in the grammaticality judgment task. Two subjects rejected it completely in the grammaticality judgment task but produced it. Two accepted it at less than 50% of time but also produced it. As a result, inconsistency in matching the production and the grammaticality judgment task occurred only in VODF, but not in VDFO or DFVO. We will see this also happen in GP 2 learners' data.

Finally, total acceptance of DFVO and VDFO, but not VODF has been observed in the grammaticality judgment task. As a result, VODF, like VOM, was still the least preferred pattern in the IL grammar.

For D/F adverbials as obligatory adverbials(VDF_{OBL} and $DF_{OBL}V$), inconsistency has also been observed. Only one learner accepted VDF_{OBL} and simultaneously rejected $DF_{OBL}V$. Others showed inconsistency in their judgments or accepted both of them.

Verb reduplication (VV) was another structure that inconsistency occurred. Some learners accepted while some rejected and more showed inconsistency in their judgments. There was no clear pattern on judgments for this structure. However, if a learner produced VV in the production task, she must accept it at 50% of time or above in the grammaticality judgment task.

The last category that deserves discussion is the preverbal co-occurrence of D/F and manner adverbials. As shown in Section 4.4.2.2.4, GP 1 learners found DFMVO more acceptable than MDFVO. This was once again supported by individual learners' performance on these two categories. 6 learners accepted both the two tokens of DFMVO but not both the two tokens of MDFVO. On the other hand, only 1 learner accepted both the two tokens of MDFVO but not those of DFMVO. 1 learner accepted both of them and 2 accepted none of them, one of whom, however, did not accept MVO. In sum, at individual level, GP 1 learners still found DFMVO more acceptable than MDFVO.

To conclude this section, GP 1 learners generally accepted both MVO and DFVO. A handful of them also accepted VMO, VDFO and VODF. VOM was the least acceptable pattern. Lastly, DFMVO was found to be more preferable than MDFVO. To match the results of the two tasks, the learners produced VDFO only if they accepted it in the grammaticality judgment task (50% of time or above) but this was not the case of VODF. The latter was produced even if the learners did not accept it in the grammaticality judgment task. We will see some more cases in GP 2's data.

4.4.3.2 GP 2 learners

Compared with GP 1 learners, GP 2 learners showed a higher level of consistency in both tasks. In addition, their scores on different categories were very close to those of the Control group. In the following, only the outstanding points that deserve discussion will be highlighted as GP 2 learners' data are more uniform than those of GP 1 learners'.

The results show that some GP 1 learners found VMO acceptable, but to GP 2 learners, VMO and VOM were overwhelmingly considered unacceptable. They only produced MVO in the production task and MVO was also the only acceptable pattern in the grammaticality judgment task. There was one exception who gave the acceptance rate of VMO as high as 75%.

Most GP 2 learners accepted VDFO and many of them considered only this category acceptable. But some learners did not reject DFVO. 6 out of 15 learners still accepted DFVO at least 50% of time or above. One of those 6 subjects only accepted DFVO, but not VDFO and VODF. Hence even GP 2 learners still had difficulty in recognizing the ungrammaticality of DFVO, unlike VMO, which was nearly uniformly rejected by all GP 2 learners.

The preference of DFMVO over MDFVO was once again confirmed though not as strong as it was in GP 1. Three learners accepted DFMVO more often than MDFVO (accepted both the two tokens of the former but not those of the latter) and only one learner held the contrary view. She totally accepted MDFVO but not DFMVO.

If we match the production task with the grammaticality judgment task,

inconsistency can be found. Three learners rejected DFVO uniformly in the grammaticality judgment task but produced it in the production task. Two learners rejected VODF (100% and 75% of time respectively) but produced this sentence pattern in the production task. However, nobody rejected VDFO (50% of time or above) but produced it. The native controls, however, overwhelming produced and accepted only VDFO. The discrepancy between the performance in the two tasks among some learners might be a reflection for self-monitoring. To the natives, it seems that VODF sounds better than DFVO. The mean acceptance rate of DFVO was 20% and that of VODF was 36.7% in the grammaticality judgment task. This may stem from the phenomenon that Chinese is undergoing word order change from VODF to VDFO. Fang (1993) has investigated two novels from 1920s to 1930s and 1990s respectively and discovered that the use of VDFO has shown an increasing trend.[19] If this analysis is on the right track, VODF probably sounds better than DFVO to the natives because the former was at least widely used a few decades ago but the latter was all the way ungrammatical.

To the learners, however, the picture is different. They most likely did not have ideas about Chinese used a half century ago. The production of DFVO might be a residue of overgeneralization and that of VODF could be L1 transfer. Section 5.3.5 in the next chapter discusses this matter in some detail.

To sum up, most GP 2 learners knew that MVO and VDFO were the most preferable patterns for accommodating the two types of adverbials. However, some still could not discard DFVO and one still could not exclude VMO in the IL. For preverbal co-occurrence of the two types of adverbials, DFMVO was found to be more preferable than MDFVO. In the production task, DFVO and VODF frequently occurred, which was specially striking when compared with Control group's data. But a learner's production of DFVO and VODF did not signify his acceptance of these two structures in the grammaticality judgment task, though, on the contrary, a learner must accept VDFO in the grammaticality judgment task if he ever produced it in the production task.

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[19] See footnote 23 in Chapter 2 for the illustration of the shortcomings of the experiment in Fang (1993).

4.5 Possible shortcomings of the experiment

A few noteworthy points that may be good reminders for those who are going to do experiment on SLA, especially on acquisition of Chinese.

First, the Chinese vocabulary repertoire of many GP 1 subjects was generally small. They encountered great difficulty in understanding some sentences, especially the long ones, in the experiment. This might frustrate the subjects and divert their attention to the vocabulary, instead of the sentence structure.

Second, the production task was primarily a means of measuring the performance, instead of the competence, of the subjects. This is because the sentence produced for each picture was only the preferred pattern, which might not have exhausted all the placement possibilities in IL. Therefore, it would be better if we had asked the subjects to produce as many as they could. Alternatively, we might make ready a collection of short phrases for the pictures and ask them to order them so as to produce as many grammatical sentences as they could.

Third, there are advantages as well as disadvantages to ask the subjects to circle the problematic parts of the sentences. The advantage is that we can guarantee what makes a sentence ungrammatical in the subjects' minds matches with what is deemed to be ungrammatical in the researchers' minds. The shortcoming is that it requires too much metalinguistic awareness. In other words, it demands substantial conscious efforts and awareness to identify the problematic parts. This, as a result, may run counter to our original intention to tap the tacit linguistic knowledge.

Finally, some structures have not been included in the test sentences but it turned out that they might be of significance to the research. This may lead to the failure to examine some important aspects of the IL grammar.

The acceptance of VMO was unexpected. It does not exist either in English or Chinese, and consequently, there is neither transfer nor any positive evidence of this structure. Its acceptance then implies that the learners, especially GP 1 learners, may also accept $VPP_{ADV}O$ (insertion of PP adverbials), VAO (insertion of AdvP adverbials) and $VNP_{ADV}O$ (insertion of NP adverbials). The former is especially important because

PP adverbials may be considered as VP adverbials and the learners are likely to accept them, if they also accept VMO. However, no $VPP_{ADV}O$, VAO and $VNP_{ADV}O$ have been included in the grammaticality judgment task.

Moreover, if the subjects showed a preference for DFMVO over MDFVO, and they accepted VMO and DFVO, they might also accept DFVMO at a higher rate than MVDFO, because in DFVMO, the D/F adverbial still resides at a higher hierarchy than the manner adverbial. If this was the case, it would provide strong evidence that the learners' IL grammar contained an adjunction hierarchy for D/F and manner adverbials and then verb raising may lead to the production of DFVMO.[20]

There were only two tokens of DFMVO and MDFVO respectively, which were not virtually sufficient to show a hierarchical structure of adverbial adjunction in the IL. But since the original hypothesis was that some learners might also accept VOMDF and VODFM, and there were two tokens for each respectively, the total four tokens for each order of adverbial adjunction were enough. As it turned out that nearly nobody accepted postverbal manner adverbials, the latter two tokens were not useful in revealing any hierarchy of adverbial adjunction in the IL. The analysis then counted on just DFMVO and MDFVO, which were apparently not strong enough to support the putative analysis of IL grammar.

To conclude this chapter, we have looked at the overall results of the two tasks and individual performance of both groups of learners in the experiment. The possible shortcomings of the experiment have also been discussed. In the next chapter, we will evaluate the results of the experiment with respect to the hypotheses made in Section 1.4 and see whether the results support the hypotheses. We also further look into the results of the experiment from the SLA perspective and try to hypothesize the developmental stages of learning Chinese adverbial placement.

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[20] Verb raising and adverbial adjunction are discussed in detail in Section 5.3.

Chapter 5

Discussion and Conclusion

In this chapter, we discuss the findings of the experiment. We start with the hypotheses made in Chapter 1 (See Section 1.4). We try to match the results of the experiment with the hypotheses and see whether the hypotheses are supported or rejected. Then, we pinpoint some important issues raised by the results of the experiment and examine them from the SLA perspective. Finally, we make use of these issues to investigate the IL grammar of the learners and hypothesize the developmental stages that a learner may undergo to acquire adverbial placement in Chinese.

5.1 The hypotheses

Based on the results of the experiment, some problems predicted in Section 1.4 are corroborated while others are not. The details are summarized below:

1. Postverbal placement of manner adverbials

This hypothesis is not sustained.[1] In the production task, preverbal placement of manner adverbials accounted for 90% and 98.3% of all the produced sentences with manner adverbials by GP 1 and GP 2 respectively. These rates were very close to that of Control group (100%). In the grammaticality judgment task, the rejection rate of VOM by GP 1 was 75% and that of GP 2 was 95%, which approximated that of the Control group(90%). Though the results of ANOVA suggest that the differences are slightly significant ($F = 3.41$, $p = 0.423$), post-hoc Scheffe test is unable to indicate the source of this effect. Therefore, it is evident that the learners rarely transferred the postverbal placement of manner adverbials from L1 English to ILs.

2. Preverbal placement of the D/F adverbials

This hypothesis is supported by the results of GP 1 learners, though GP 2 learners tended not to place the D/F adverbials preverbally. In the production task, preverbal

[1] According to the individual learner's performance discussed in Section 4.5, only one GP 1 learner, out of 15, exhibited persistent post-object placement of manner adverbials.

placement of D/F adverbials accounted for 59.2% of all the produced sentences with D/F adverbials by GP 1 learners. The rates for GP 2 and the Control group were as low as 19.2% and 0.85% respectively. In the grammaticality judgment task and for GP 1 learners, the acceptance rate of DFVO was 63.3%, a rate significantly higher than those of GP 2 (35%) and the Control group (20%) ($p = 0.0010$), which, in turn, suggests that native speakers of English incline to place the D/F adverbials preverbally at an early stage of learning Chinese, even though they could acquire the target structure at some later stage.

3. Post-object placement of the D/F adverbials

It was hypothesized that even after the learners realized that the D/F adverbials should occur postverbally, they would not accept adverbial intervention between verb and object complement because they wished to obey strict adjacency. As a result, they should reject adverbial intervention but accept post-object placement of the D/F adverbials. There was even positive evidence to support the latter syntactic configuration. This hypothesis, however, was not borne out by the results of the experiment. Both groups of learners produced and accepted inserted D/F adverbials more often than post-object D/F adverbials, though preverbal placement of D/F adverbials was still the prevailing option for GP 1 learners. In the production task, GP 1's mean production rate of inserted D/F adverbials was close to that of post-object D/F adverbials. The former rate was 8.35% and the latter was 10.85%. For GP 2, the difference between the two rates was greater. While inserted D/F adverbials accounted for 35.85% of all the produced sentences with D/F adverbials, post-object D/F adverbials accounted for only 8.35%. For the Control group, inserted D/F adverbials accounted for 70.85% and post-object D/F adverbials accounted for just 0.85%.

The grammaticality judgment task gives a more clear-cut result which shows that both groups of learners accepted VDFO more often than VODF. For GP 1, the acceptance rate of the former was 41.7% and that of the latter was 26.7%. For GP 2, the acceptance rate of VDFO was 75% and that of VODF was 15%. Therefore, it is clear that the learners allowed violation of strict adjacency in Chinese. For postverbal placement of D/F adverbials, both groups of learners accepted VDFO more often than VODF. This pattern was in concordance with the judgments of the Control group as

the acceptance rate of the former was 95% and that of the latter was only 36.7%.

4. Lack of distinction in the occurring order of manner and D/F adverbial

This hypothesis was also not corroborated. It was assumed that the manner and the D/F adverbials were not distinguished in their adjunction to the verb phrase. In other words, the learners might hypothesize that since both of them were VP adverbials, they could be adjoined to the verb phrase without a specific order. This would result in the acceptance of both MDFVO and DFMVO, assuming that first of all, the learners accepted preverbal placement of D/F adverbials.

The results of the experiment did not confirm this hypothesis. In the grammaticality task, GP 1 learners accepted DFMVO more often than MDFVO. The acceptance rate of the former was 63.3% and that of the latter was 33.3%. Therefore, GP 1 learners seemed to prefer to adjoin the manner adverbial, before the D/F adverbial, to the verb phrase, resulting in the higher acceptance rate of DFMVO, compared with MDFVO. For GP 2 and the Control group, both DFMVO and MDFVO were unanimously rejected. This was most probably because both GP 2 and the Control group did not generally accept preverbal placement of D/F adverbials, as shown in the generally low acceptance rates of preverbal D/F adverbials. (See Table 15 in Section 4.4.2.2.2) GP 2's acceptance rate of DFMVO was 23.3% and of MDFVO was 16.7%. Both the Control group's acceptance rates of DFMVO and MDFVO were 13.3%.

Of the four hypotheses made in Section 1.4, three were not sustained and only one was confirmed. Summarizing, nearly all learners did not place manner adverbials in post-object positions. Moreover, both groups of learners allowed D/F adverbial intervention., though GP 1 learners also placed D/F adverbials preverbally whereas GP 2 learners tended not to do so. Lastly, GP 1 learners preferred the DFMVO order, instead of the MDFVO order but GP 2 learners rejected both.

5.2 Some important issues

This section highlights a few important issues that deserve further investigation. Some are based on the hypotheses supported or rejected in the previous section and

some are new observations derived from the results of the experiment. We discuss some preliminary insights into ILs of the learners in this section and the next section will deal with the developmental stages that a learner may undergo in order to acquire target adverbial placement in Chinese.

5.2.1 Little evidence of negative transfer

To identify evidence of negative transfer, we should look at the placement of manner adverbials, together with the placement of NP, PP and AdvP adverbials. Because of the involvement of the definiteness effects, the placement of D/F adverbials, however, is not a reliable factor in making any inference to transfer.

As discussed in Chapter 2, English manner adverbials can be placed before the verb or after the object. In Chinese, however, only preverbal placement of manner adverbials is allowed. There is no positive evidence of VOM. Thus, if the English learners place the Chinese manner adverbials after the object, this could be very strong evidence that the English learners transfer L1 structure to their Chinese ILs.

In the grammaticality task, the rejection rates of VOM by GP 1 and GP 2 learners were as high as 75% and 95% respectively. In the production task, only one GP 1 learner, out of the 30 learners in two groups, persistently produced post-object manner adverbials (3 out of 4 tokens in VOM). This overall result, therefore, strongly suggests that the learners did not transfer the post-object placement of manner adverbials from L1 to their ILs.

In addition to the placement of manner adverbials, we could also reject the possibility of negative transfer by examining the placement of other adverbials, including the NP, PP and AdvP adverbials. In English, sentential NP adverbials like *this year*, sentential PP adverbials like *in 1997*, and sentential AdvP adverbials like *tomorrow*, can be placed before the verb or after the object. But in Chinese, they are all placed before the verb; no postverbal placement of these adverbials is allowed. As a result, there should be no positive evidence of postverbal placement of these adverbials in the input data and any postverbal placement of these adverbials in IL can be traced to negative transfer.

In the grammaticality judgment task, GP 1 learners' rejection rates of $VONP_{ADV}$, $VOPP_{ADV}$ and VOA were 80%, 83.3% and 83.3% respectively. Their respective rejection rates by GP 2 learners were 90%, 90% and 86.7%, all of which were closely approximating the Controls' rates of 86.7%, 76.7% and 80% respectively. Therefore, the learners seemed not to transfer their English L1 postverbal adverbial placement patterns to the Chinese ILs.

The absence of negative transfer in our finding, however, runs counter to Jin's (1989) as in her experiment, English-speaking learners showed evidence of transfer in their acceptance of post-object manner adverbials[2]. Our result also contrasts with the series of researches done by White and Trahey (See Section 1.2.1), which shows that the French learners would transfer their L1 adverbial placement patterns in the acquisition of English.[3]

Some notes should be made on the placement of D/F adverbials. The post-object placement of D/F adverbials seemed to marginally support the transfer hypothesis. In the grammaticality judgment task, the acceptance rates of VODF by GP 1 and GP 2 were 26.7% and 15% respectively. (The Control rate was 36.7%) In the production task, VODF was not as uncommon as VOM. Both groups of learners did produce some VODF structures. (The mean production rates of VODF by GP 1 and GP 2 were 10.85% and 8.35% respectively.) But since there is positive evidence of VODF (see discussion in Section 2.2.3, as the more definite the verbal complements are, the more likely the D/F adverbials occur in post-object position), we do not know whether the production or acceptance of VODF by both groups of learners was due to transfer or exposure to the VODF input data. Therefore, for evidence of transfer, we can only look at the placement of manner, NP, PP and AdvP adverbials. The placement of D/F adverbials is nevertheless not a reliable indicator.

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[2] See Section 1.2.2 for discussion of shortcomings of Jin's (1989) experiment. One shortcoming, to be repeated here, is the small number of test sentences in the grammaticality judgment task.

[3] Considerations might be given to the similarity between L1 and L2 and the learning strategy of the learners when comparing English-French and English-Chinese transfer. The great number of cognates shared between English and French might induce transfer and the great difference between Chinese and English might increase the temptation for the learners to use novel structures.

5.2.2 VMO

In the grammaticality judgment task, the acceptance and rejection rates of VMO by GP 1 learners were 25% and 65% respectively. Both these two scores were significantly different from those of the Control group. ($p = 0.01$, $p = 0.0041$ respectively) (The acceptance and rejection rates of VMO by the Control groups were 1.7% and 98.3% respectively.) GP 2 learners, though, overwhelmingly rejected VMO (rejection rate at 91.7%). The question then is why the GP 1 learners accepted VMO at such a high rate? The VMO order is not grammatical both in English and Chinese. In English, because of strict adjacency, nothing should intervene between verb and object. Pollock (1989) postulates the parametric value of absence of verb raising in English to account for this structural property. (See Section 3.1.1.1) In Chinese, it is generally assumed that verb raising to Infl is not sanctioned (Gu 1995) and therefore, strict adjacency is observed and nothing should intervene between verb and object.[4] Since verb raising is absent in English, transfer of verb raising is not anticipated. There is also no positive evidence in Chinese for VMO. Then why did the GP 1 learners accept VMO to such an extent?

If we compare the rejection rate of VMO with VOM by GP 1 learners, we find that the rejection rate of the former is lower (65% with 75%). That implies that GP 1 learners were more ready to reject the structure that was acceptable in L1 but not substantiated in L2, than the structure that did not exist in either L1 or the target language. For GP 2 learners, VMO was overwhelmingly rejected (91.7%) but there was still one learner who consistently accepted it. (See Section 4.4.3.2). The questions to be resolved are: What was it in GP 1 learners' IL grammar that made the learners fail to reject VMO? Is there any relation between the acceptance of VMO and VDFO (41.7% of acceptance) ($t = 1.2826$, $p > 0.05$) by GP 1 learners? These two questions will be pursued and tentative answers will be proposed in Section 5.3.

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[4] Huang (1992) argues against this. He proposes that verb raising occurs when there is a mismatch between syntax and semantics, though he also admits that verb raising occurs only in very restrictive conditions. See Section 3.2.2.2 for detailed discussion on how verb raising may accept the placement of the D/F adverbials.

5.2.3 MDFVO and DFMVO

While both the Control group and GP 2 found MDFVO and DFMVO unacceptable, GP 1 learners tended to accept DFMVO more often than MDFO. The acceptance rate of DFMVO by GP 1 was 63.3%, and that of MDFVO was 33.3%. The corresponding acceptance rates of DFMVO by GP 2 and the Control group were as low as 23.3% and 13.3% respectively and those of MDFVO were 16.7% and 13.3% respectively. ANOVA indicates that the difference of the acceptance rates of DFMVO is significant ($F = 10.02$, $p = 0.0003$) and post-hoc Scheffe test ($p < 0.05$) shows that GP 1 is significantly different from those of other two groups. On the other hand, ANOVA reveals no significant difference among the acceptance rates of MDFVO ($F = 1.85$, $p = 0.17$).

As both MDFVO and DFMVO are impossible in Chinese, it must not be the Chinese data that induced GP 1 learners to accept the latter more often than the former. Then the question is how GP 1 learners came to generalize such an occurring sequence of the two types of adverbials in the IL grammar.

If for some reason the learners did adjoin the manner and the D/F adverbial to the verb phrase in the DFMVO order, they should encounter extra difficulty in acquiring the target structure if we follow Tang (1990). According to Tang (1990), it should be the D/F adverbial being adjoined to the verb phrase, and the manner adverbial to the PredP on the higher hierarchy. The learners now reversed the order of adjunction, with the D/F adverbial being stacked on the manner adverbial. In order to learn the target structure, the learners should, first of all, realize that this sequence of adverbial adjunction deviates from the target. We shall discuss the triggers for acquiring target adverbial adjunction in detail in Section 5.3.3.

5.2.4 Overgeneralization

In English, NP D/F adverbials are not allowed to occur preverbally. In Chinese, all adverbials except D/F ones are placed preverbally. There is no positive evidence that Chinese D/F adverbials can be placed preverbally (except preverbal definite D/F adverbials followed by *dou* and/or a negator *mei*). As a result, any production or acceptance of preverbal D/F adverbials may stem from overgeneralization of the rule of

preverbal placement from other types of adverbials, including the manner, NP, PP and AdvP adverbials.

In the production task, the mean production rate of preverbal D/F adverbials by GP 1 was 59.2% and that of GP 2 was 19.2%. (The Control rate was 0.85%) In the grammaticality judgment task, the mean acceptance rate of DFVO by GP 1 was 63.3% and that of GP 2 was 35%. (The Control rate was 20%). The results suggest that GP 1 learners obviously overgeneralized preverbal placement to D/F adverbials, while GP 2 learners rarely did so.

The high acceptance rate of $DF_{OBL}V$ (45%) by GP 1 learners was also strong evidence for overgeneralization of preverbal placement to D/F adverbials. (The acceptance rate by the Control group was 11.7%) The Chinese verbal complements, including the most common type of object complement, generally occur postverbally in canonical structures. Therefore when the D/F adverbials function as obligatory elements in the sentence, they resemble verbal complements and should be placed postverbally. GP 1 learners, however, indiscriminately placed many of the D/F adverbials in preverbal positions, without taking into consideration that some of them were obligatory components. Therefore, the rule of preverbal placement of all adverbials seemed so firmly established in GP 1 learners' IL grammar that a violation of postverbal placement of obligatory items was more preferred to a violation of preverbal adverbial placement.

Finally, individual learners' performance (See Section 4.4.3) also confirms that preverbal placement of D/F adverbials was a robust feature in GP 1 learners' IL grammar. For GP 2 learners, preverbal D/F adverbials were less frequently accepted though their occurrence was frequent in a few learners' grammar. The results of the production task further support this claim. (19.2% of all the produced sentences with D/F adverbials by GP 2 were in the preverbal category.)

However, along with preverbal placement of D/F adverbials, it is noteworthy that to a certain extent the learners also accepted adverbial insertion between verb and object. Therefore, the learners' IL grammar allowed more than one placement possibilities for adverbials. In the grammaticality judgment task, the mean acceptance

rate of VDFO by GP 1 learners was 41.7% and 75% by GP 2 learners, compared with 95% by the Control group. Even though GP 2 learners produced a number of sentences with preverbal D/F adverbials (19.2%), they produced a more significant number of VDFO sentences (35.85%), along with verb reduplication (20.85%). Hence it is obvious that the most preferred structure for GP 1 learners was DFVO, and the less preferable one was VDFO. To GP 2 learners, the most preferred structure was VDFO and verb reduplication was next in line. DFVO followed these two. To both groups of learners, VODF was the least acceptable one (though acceptable to the Control group some of the time), compared with DFVO and VDFO. The manner adverbials also exhibited the similar placement preference of the learners though the difference between the acceptance rates of various placement patterns was more distinctive. MVO was unanimously preferred while VOM was overwhelmingly rejected by both groups of learners. VMO stood in the middle. (See Section 5.2.2) To the Control group, MVO and VDFO were overwhelmingly preferred (93.3% and 95% of acceptance respectively) and VOM and VODF were the next preferred placement patterns (8.3% and 36.7% of acceptance respectively). VMO and DFVO were the least preferred ones (1.7% and 20% of acceptance respectively).

The marginal acceptance of VDFO and VMO indicates that the learners did not sustain strict adjacency in their IL grammar. This, once again, strongly hints that the learners might not transfer their L1 grammar in their acquisition of Chinese adverbial placement; for otherwise, they would not violate strict adjacency, which is a very rigorous rule in English. They, instead, might have adopted some other principles in generalizing the Chinese adverbial placement patterns in their ILs.

5.2.5 Lack of awareness of different placement patterns for manner and D/F adverbials by Group 1 learners

It was mentioned in the previous section that some learners overgeneralized the preverbal placement to all types of adverbials. Then one question raised is whether these learners could distinguish the different placement patterns for the manner and the D/F adverbials. In other words, whether they collapsed both types of adverbials into one and gave them a single placement pattern, or they could distinguish them and place them in different positions in a sentence. The answer seems to be negative to GP 1

learners and seems to be positive to GP 2 learners. Table 1 summarizes the mean acceptance rates of different placement patterns for the manner and D/F adverbials by GP 1 in the grammaticality judgment task.

Table 1 The mean acceptance rates of different placement patterns for the manner and D/F adverbials by GP 1

	Mean acceptance Rate (%)		Mean acceptance Rate (%)
MVO	75	DFVO	63.3
VMO	25	VDFO	41.7
VOM	18.3	VODF	26.7

Pair-T tests show that MVO and DFVO, VMO and VDFO, VOM and VODF do not differ significantly. (See Section 4.2.2.2) Consequently, GP 1 learners seemed not to distinguish the placement patterns for the manner and D/F adverbials. In other words, they collapsed both types of adverbials together (most probably also treating NP, PP and AdvP adverbials alike since the mean acceptance rates of $NP_{ADV}VO$, $PP_{ADV}VO$ and AVO were also very high and very close to those of MVO and DFVO) and treated them similarly in their placement pattern. To GP 1 learners, both the manner and the D/F adverbials were preferred in preverbal positions. Their insertion between verb and object was marginally acceptable. The least preferred option was their post-object placement.

GP 2 learners, however, could distinguish the two types of adverbials. Table 2 summarizes the results of GP 2's judgments for these two types of adverbials in the grammaticality judgment task.

Table 2 The mean acceptance rates of different placement patterns for the manner and D/F adverbials by GP 2

	Mean acceptance Rate (%)		Mean acceptance Rate (%)
MVO	90	DFVO	35
VMO	5	VDFO	75
VOM	1.7	VODF	15

Pair-T tests show that all pairs of MVO and DFVO ($t = 4.9669$ $p < 0.05$), VMO and VDFO ($t = 7.8971$, $p < 0.05$), VOM and VODF ($t = 1.7953$, $p < 0.05$) differ significantly. Hence, this implies that GP 2 learners were able to distinguish the two types of adverbials. While manner adverbials were overwhelmingly preferred to be placed preverbally, D/F adverbials were preferred to occur between verb and complement.

In a nutshell, the less advanced learners like GP 1 learners still collapsed all types of adverbials together and treated them similarly in their placement. To them, preverbal placement of all types of adverbials was strongly preferred. The advanced learners like GP 2 learners were able to distinguish the D/F adverbials from other adverbials and give the former type a different placement pattern, that is, insertion between verb and complement.

5.2.6 Inconsistency in judgments

If the grammaticality judgment task reflects the competence and the production task reveals the performance of the learners, two sets of results should match each other well since competence underlies performance. This can be seen from the Control group's results of the two tasks. The Controls accepted MVO and VDFO at a high rate in the grammaticality judgment task and they also mainly produced the MVO and

VDFO orders in the production task. Apart from other possible structures in accommodating D/F adverbials in a sentence, for example, verb reduplication and topic structure, there were only few sentences produced that did not fall into these two structural patterns. But for some learners, the results of the two tasks displayed inconsistency.

As mentioned in Section 4.4.3, some learners rejected VODF in the grammaticality judgment task but produced sentences with post-object D/F adverbials in the production task. This was especially the case to GP 2 learners. Many GP 2 learners did not generally accept DFVO and VODF in the grammaticality judgment task, but nevertheless, these two sentence patterns kept recurring in the production task. Three GP 2 learners consistently rejected DFVO (less than 50% of acceptance in the grammaticality judgment task) but produced it in the production task. Likewise, two GP 2 learners consistently rejected VODF (also less than 50% of acceptance in the grammaticality judgment task) but also produced it in the production task. If we attributed this to performance errors, the performance errors were more systematic than they appeared to be. It is because no learners rejected VDFO in the grammaticality judgment task if they produced VDFO sentences in the production task. In other words, a learner might most likely accept VDFO if he ever produced such structure in the production task. The performance errors then were not a 'slip of pen'. They, however, reflected that competence did not match with performance over the structures DFVO and VODF.

The same phenomenon occurred in GP 1. If the learner produced VDFO, she should accept it (at 50% or above of time) in the grammaticality judgment task. On the other hand, two learners did not accept VODF but did produce it. Therefore, we come to the questions why the learners showed such a preference over DFVO and VODF in the production task and which task really revealed their competence. We will further discuss this problem in Section 5.3.5.

5.2.7 Why was adverbial placement learnable?

If the learners only took into account the input data to learn adverbial placement, adverbial placement should be unlearnable, especially if we start our investigation of

learnability from the structures accepted and produced by GP 1 learners, to the achievement of GP 2 learners. GP 2 learners' performance in the experiment was comparable to that of the Controls. Although some learners were unable to achieve near-native competence in adverbial placement, the overall performance or the performance of the majority of GP 2 learners did show that adverbial placement in Chinese was learnable.

The acquisition of the target structures might present no difficulty to the learners. Based on positive evidence, the learners might be able to acquire the target structures, for example, MVO and VDFO. However, how could the learners finally realize that DFVO and VMO were impossible, as confirmed by GP 2 learners' data? If DFVO and VMO had not shown up in GP 1 learners' ILs, they would not have posed problems to the accounts for the learnability of adverbial placement. But GP 1 learners did accept them to some extent, which indirectly implied that their IL grammar admitted these structures. Then the question is how they unlearnt these ungrammatical structures, which are deemed to be possible based on the results of GP 2. They seem to be possible structures in Chinese as there is positive evidence for the corresponding MVO and VDFO. If a learner collapses these two adverbial types together (that is the tendency of GP 1 learners, as discussed in Section 5.2.5) and generalizes their placement patterns, he would inadvertently consider both DFVO and VMO as possible structures. Nothing in the input could refute this generalization. No positive evidence shows that they are impossible. This, as a result, gives rise to the learnability problem because the learner seems unable to unlearn DFVO and VMO. Then, how can the learner finally overcome the learnability problem and unlearn these two illegitimate structures, as evidenced by the results of GP 2 learners?

Another factor that incurs difficulty for the learners to learn target adverbial placement is the non-target adverbial adjunction. (See Section 5.2.3) GP 1 learners showed preference for DFMVO over both MDFVO and the target structure MVDFO, where presumably the manner adverbial has larger modification scope than the D/F adverbial. (Tang 1990) In the DFMVO structure, however, the D/F adverbial appears to have scope over the manner adverbial, exactly in contraction to the target scope relation between the manner and D/F adverbials. Therefore, in order to acquire the

target adverbial adjunction of the two types of adverbials, the learners should, first of all, realize that the D/F adverbial is in the modification scope of the manner adverbial.[5]

The MVDFO structure may be most probably learnable since it itself obviously suggests that the manner adverbials has scope over the D/F adverbials. However, even if MVDFO is learnable, it might be insufficient to preempt MDFVO and VMDFO, as long as the learners also accept DFVO and VMO, as what we observe in GP 1 learners' results. In both MDFVO and VMDFO, the manner adverbial appears to have larger scope than the D/F adverbial and therefore, they might not be eradicated by the input data of MVDFO.

GP 2 learners' results, however, suggest that they could successfully eradicate DFMVO and MDFVO[6] in their IL grammar and only accepted MVDFO. In other words, they were able to achieve near-native competence in adverbial placement. The question is how a learner unlearns some ungrammatical adverbial placement structures if positive evidence is unavailable.

In summary, no evidence of transfer was observed in both groups of learners. They generally accepted preverbal placement and rejected post-object placement of all types of adverbials. GP 1 learners did not distinguish the D/F adverbials from other adverbials and overgeneralized preverbal placement to the D/F adverbials, resulting in the acceptance of DFVO. Along with preverbal placement of all adverbials, they also, to some extent, accepted adverbial intervention, including VMO and VDFO. With respect to the order of adverbial adjunction, GP 1 learners found DFMVO more preferable than MDFVO, plausibly hypothesizing that the manner adverbial should be adjoined to the verb phrase prior to the D/F adverbial.

In spite of the numerous non-target structures produced or accepted by GP 1

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[5] Note that the scope relation between the manner adverbial and the D/F adverbial, as stipulated in Tang (1990) might be problematic. See Footnote 18 in this chapter for a detailed discussion.

[6] We do not know whether VMDFO was accepted by the learners because it was not included in the experiment as test sentence.

learners, Chinese adverbial placement was learnable, as reflected in the results of GP 2 learners. GP 2 learners have achieved near-native competence in adverbial placement. They generally rejected post-object placement of all types of adverbials and preferred MVO and VDFO over others. All the non-target structures existed among GP 1 learners were no longer persistent in GP 2. However, GP 2 exhibited a mismatch of competence and performance as some of the learners, while rejecting DFVO or VODF in the grammaticality judgment task, nevertheless, produced them in the production task. This mismatch, however, was not observed in the production of VDFO. They produced VDFO only if they also accepted it in the grammaticality judgment task. GP 1 also manifested the same problem of mismatch of competence and performance by rejecting VODF in the grammaticality judgment task but producing it. Nevertheless, GP 1 learners overwhelmingly accepted and produced DFVO.

In the next section, we will hypothesize the developmental stages a learner may go through in the acquisition of Chinese adverbial placement.

5.3 The developmental stages of acquiring Chinese adverbial placement

We hypothesize 3 stages that an English learner may undergo in acquiring Chinese adverbial placement. The first is the unlearning of postverbal manner adverbials. The second is the acquisition of absence of verb raising in Chinese.[7] The third is the acquisition of adverbial adjunction.

5.3.1 The unlearning of postverbal manner adverbials

As observed in previous studies of acquisition of English adverbial placement by French learners (White 1991, White & Trahey 1993, Trahey 1996) and acquisition of Chinese adverbial placement by English learners (Jin 1989) (see the discussion in Section 1.2), the learners tended to transfer their L1 knowledge of adverbial placement to the IL grammar. But unexpectedly, this study has not confirmed this tendency. The English learners of Chinese seemed not to transfer adverbial placement patterns from

[7] The second stage, the acquisition of absence of verb raising in Chinese, may be optional. We will discuss the reasons in Section 5.3.2.

L1 English to Chinese IL.[8] As illustrated in Section 5.1 and 5.2, both groups of learners rarely placed the manner adverbials after the object complement in the production task. In the grammaticality judgment task, the acceptance rates of post-object placement of manner adverbials and D/F adverbials were the lowest, among other placement options. The strong preference for $NP_{ADV}VO$, $PP_{ADV}VO$, and AVO over the corresponding $VONP_{ADV}$, $VOPP_{ADV}$, and VOA further supported the no-transfer hypothesis. And more importantly, the acceptance rates of the preverbal manner, NP, PP and AdvP adverbials and the rejection rates of their postverbal placement by both groups of learners were very close to those of the Control group.

The absence of transfer can be argued from three perspectives, first, word order; second, a default pattern in acquiring adverbial placement; third, indirect negative evidence. All three accounts will be discussed below, though none of them seem able to unravel the puzzle.

If SOV is assumed to be the basic word order in Chinese,[9] the unacceptability of postverbal manner adverbials could be accounted for. It could be claimed, based on the results of the experiment, that at an early stage of learning Chinese[10], the English-speaking learners have already realized that the SOV order is the basic Chinese word order. English is assumed to be a SVO language while Chinese is argued to be a SOV language. (Huang 1982, Li 1990, Li & Thompson 1975, 1981, Tang 1990) Therefore, once a learner realizes that Chinese is different to English and is a head-final language, he would automatically place all adverbials preverbally.

The word order account, nevertheless, incurs many problems. First, theoretically speaking, Chinese does not appear to be a SOV language. The most unmarked word

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[8] What we can tell is only the lack of negative transfer, that is, the transfer of post-object adverbial placement patterns. We cannot, however, conclude on the possibility of positive transfer, as we do not know whether the acceptance of preverbal adverbial placement patterns was a result of the input data or transfer.

[9] See the discussion in Section 3.2.1 for the argument over SVO and SOV word order in Chinese.

[10] The average duration of formal Chinese education received by GP 1 learners is about 1 year and the so-called early stage of learning Chinese may not be really early. A few learners, though, had taken Chinese courses for less than a year.

order is SVO. Second, the learning of SOV word order, if it is assumed as the underlying word order in Chinese, seems extremely difficult. Most Chinese sentences emerge in SVO structure. The evidence in support of the SOV order is minimal and perhaps even out of reach to elementary and intermediate learners. The *ba*-construction and the left-branching relative clause are probably pretty infrequent structures to the learners. In fact, the strongest and most frequent evidence is preverbal placement of most adverbials, which, however, if assumed to be the trigger for SOV order, would lead to circularity in reasoning. It is because on the one hand, the acquisition of preverbal adverbial placement would give rise to the awareness of SOV word order in Chinese and on the other hand, the acquisition of SOV word order would induce the learners to accept preverbal adverbial placement. Consequently, it creates the question of which one serves as the trigger for the other. Third, since most Chinese sentences surface in SVO order, the hypothesis of the acquisition of SOV order seems almost impossible to refute. Once again, if the rejection of post-object adverbial placement serves as a clue to support this hypothesis, we would run into the same problem of circularity in reasoning. Hence, the SOV word order account appears unable to account for the rejection of postverbal manner adverbials.

As mentioned at the beginning of this section, apart from the word order account, there are two more possible accounts to explain the non-occurrence and unacceptability of postverbal manner adverbials, though they also incur a lot of logical problems. First, we can hypothesize a default placement pattern for adverbials and assume that all learners of any language start with the default in learning adverbial placement. The learners will not accept other adverbial placement patterns unless positive evidence is available. We may postulate that the default pattern is preverbal placement of all adverbials. Suppose the learner follows this default pattern and places all Chinese adverbials in preverbal positions. This default pattern, obviously, matches with the input data of the placement patterns of many Chinese adverbials. As the learner registers more positive evidence and 'discovers' that insertion is also possible, she also allows adverbial insertion between verb and object. If she, however, does not see any post-object adverbials, she realizes its ungrammaticality and consolidates the IL grammar with only preverbal and inserted adverbials.

This account seems to work well in the acquisition of Chinese adverbial placement as preverbal placement of many adverbials was found to be overwhelmingly preferred by both groups of learners. Though GP 2 learners preferred VDFO more often than DFVO, they did not totally reject the latter (35% of acceptance in the grammaticality judgment task). Among GP 1 learners, both VDFO and VMO were found marginally acceptable (41.7% and 25 %respectively).

There are problems with this account when we take into consideration the acquisition of adverbial placement in other languages. First, French learners do not seem to hold such a default value of preverbal adverbial placement in their acquisition of English. White (1991), Trahey and White (1993) and Trahey (1996) found that the French learners transferred their L1 properties to their IL grammar, allowing adverbial insertion, which is not permissible in English. If a default value of adverbial placement is instantiated in acquiring adverbial placement in all languages, why did the French learners not follow the default preverbal adverbial placement pattern in acquiring English adverbial placement but bring in some other knowledge? And to the contrary to the acquisition of Chinese by English speakers, the French learners seemed to start with adverbial intervention, probably brought forward by transfer, and acquire preverbal adverbial placement upon positive evidence. Therefore, their IL development appeared to be dominated by transfer, violating the postulation of default preverbal adverbial placement pattern. Another controversy is the theoretical basis for postulating such a default pattern for acquisition of adverbial placement. One cannot see the rationale for adopting a particular default pattern over others, especially when adverbial placement patterns do not fall into some subset and superset relation. Finally, if a learner of Chinese starts from preverbal placement of all adverbials and gradually relaxes this constraint in the presence of positive evidence, they would run into another learnability problem. With the input data of VDFO, the learners would also accept VDFO. But VDFO is insufficient to preempt DFVO. As a result, both VDFO and DFVO should exist in the final IL grammar. But the results of the experiment show that GP 2 learners' acceptance rate of VDFO was significantly different from that of DFVO.

The last account for the unacceptability of post-object adverbials has to do with the effect of indirect negative evidence. The non-occurrence of VOM, $VONP_{ADV}$,

VOA and $VOPP_{ADV}$ may serve as indirect negative evidence for their nonexistence in Chinese. (Chomsky 1981) But whether indirect negative evidence is useful and workable is controversial. (Braine 1971) Furthermore, VMO does not exist in Chinese; hence indirect evidence should be able to inform the learners of its ungrammaticality. But why did GP 1 learners still marginally accept it, especially if it also violates strict adjacency? Why did the French learners of English (White 1991) accept adverb intervention, if there is no such input data in English?

Summarizing, none of the three accounts discussed in this section can explain the rejection of post-object adverbials. The word order account counters the basic SVO word order fact in the input and incurs the problem of circularity in reasoning. The default pattern account gives rise to the learnability problem of DFVO. The indirect negative evidence account is in short of explaining the instantiation of VMO in GP 1 learners' grammar.

If we take into account some other factors, in fact, there are some insights into this puzzle, though they cannot be evidently supported by the data of this research. Hence, we just put them as hypotheses. One learner told us that he used a simple rule of thumb to deal with some Chinese elements. It stated that move everything before the verb (probably apart from the object) no matter what it is. He had discovered that many Chinese phrases occur before the verb. Therefore, he concluded that the safest way to get a grammatical sentence in Chinese is to move all the phrases, even though their meanings are unknown to him, before the verb.

Some evidence from the research also seems to support this strategy. A handful of GP 1 learners consistently corrected the grammatical sentence like *Li xiaojie mingtian lai Xianggan* (Miss Li tomorrow comes to Hong Kong) by moving the NP adverbial *mingtian* (tomorrow) before the subject *Li xiaojie*. This occurred mostly with temporal adverbials, like *zuotian* (yesterday), and *zaoshang badian* (morning eight o'clock). They rarely, however, moved manner adverbials and PP adverbials to the front of the sentence, though to other preverbal positions. Therefore, the learners might have adopted a strategy that the sentence adverbials, like the NP temporal adverbials, must occur before the subject, while the VP adverbials, like the manner adverbials, must occur before the verb. This strategy might not be deduced from positive evidence

because the input data allow the post-subject or even post-modal occurrence of sentence adverbials, for instance, *Li xiaojie yinggai mingtian lai Xianggan* (Miss Li should tomorrow come to Hong Kong).

This strategy may be concluded from the unavailability of any elements, except the objects, after the verb.[11] Then, perhaps, it further develops to the rule that the modifee should follow the modifer, resulting in the precedence of the sentence adverbials over the sentence and the manner adverbials over the verb. This strategy, nevertheless, is supported by most of the input data (except the post-verbal occurrence of D/F adverbials), even though the input is more lax on the placement of sentence and even PP adverbials. But as long as the sentences the learners produce are grammatical, they might not care about other possibilities in the target grammar and gradually, they even reject the grammatical structures not endorsed by the strategy.

Apart from the consideration of the learning strategy, the input might have some effects on the acquisition of manner adverbial placement. The source of input to the learners seemed very varied. Besides that the courses they had taken were very different, the living experience in Mandarin-speaking countries and contact with Chinese natives were also important factors for acquiring input. Nevertheless, the input of adverbial placement might not be in short supply.

Most Mandarin textbooks teach adverbial placement[12], even though negative evidence of postverbal adverbial placement might not be available. Out of the many types of adverbials, the occurrence of NP temporal adverbials like *jinnian* (this year) and PP locative adverbials *zai xuexiao* (at school) should be considered most frequent. Manner and D/F adverbials may be less frequently used by both native speakers as well as the learners because they do not constitute the basic elements in daily conversation. However, the placement of temporal and locative adverbials may shed light on the

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[11] That may be why GP 1 learners also overgeneralized the preverbal adverbial placement to obligatory D/F adverbials (See Section 5.2.4). But undeniably some awareness of the concept of complement and its postverbal occurrence was also taking root, for otherwise, they would not accept VDF_{OBL} to a certain extent.

[12] It should be admitted that the placement of D/F adverbials does not very often taught in the textbooks. This may partly account for the late acquisition of the placement of this adverbial type.

placement of other adverbials. One possibility is the adoption of the strategy that Chinese adverbials should be placed before the elements they modify, as mentioned previously in this section. If the learners 'discover', based on the input of some types of more frequent adverbials such as the temporal and locative adverbials, and perhaps some negative evidence from the teachers and native speakers, that adverbials should precede the modifees, they might generalize to preclude postverbal adverbials. Therefore, the rejection of postverbal manner adverbials might only be generalized from other adverbial types. On the other hand, the overgeneralization of preverbal D/F adverbials might most likely amount to the same principle of generalization. But, nevertheless, we should not neglect the textbooks' effect on the acquisition of manner adverbial placement. Most textbooks give input on preverbal manner adverbials, but less on postverbal D/F adverbials. This may account for the easy mastery and early acquisition of manner adverbial placement, as well as the acceptance of the non-target preverbal D/F adverbials.

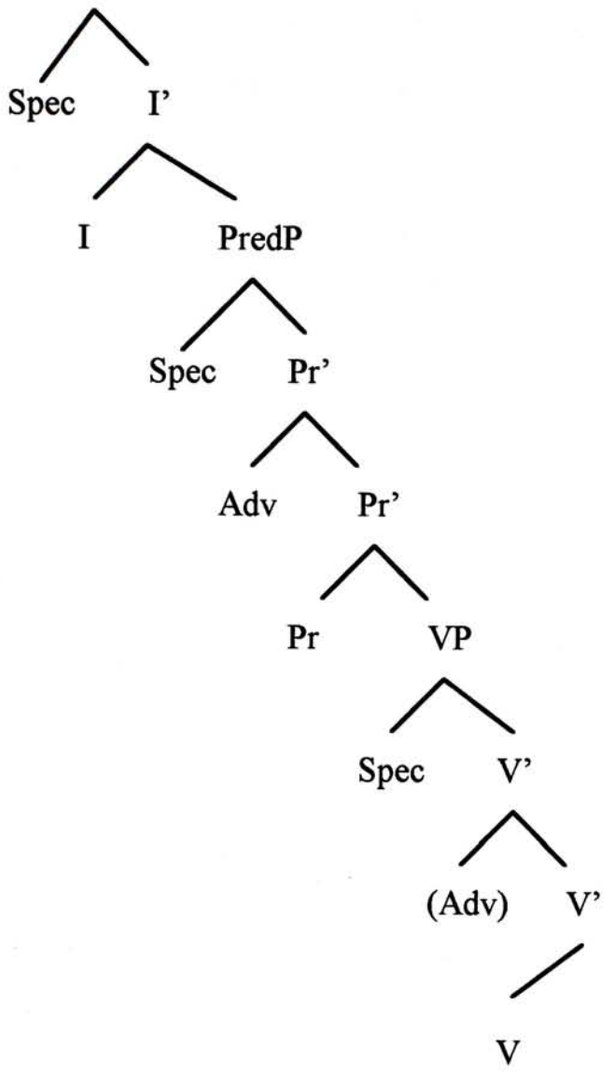
To conclude, pure linguistic analysis might be inadequate to account for the rejection of postverbal manner adverbials. If input and learning strategy are considered, we can gain some insights into the possibility of the easy mastery of target manner adverbial placement, despite that this research could not give concrete evidence to support the hypotheses. Further studies may investigate these two aspects.

5.3.2 Optionality of verb raising and adverbial adjunction pattern

In two GP 1 and one GP 2 learners' IL grammar, all adverbials were placed preverbally. But to thirteen GP 1 learners and six GP 2 learners, both preverbal and inserted D/F adverbials were acceptable at least 50% of time. To five GP 1 learners and one GP 2 learners, inserted manner adverbials were acceptable at least 50% of time. In the grammaticality judgment task, GP 1 learners accepted VDFO at 41.7% and VMO at 25% of time, even though the latter is not allowed in Chinese. In other words, besides the simple rule of preverbal placement of all adverbials, there was some complexity in the IL grammar that made the learners accept adverbial insertion as well. Two accounts for this phenomenon are available. First, the learners assumed optionality of verb raising. Second, the learners permitted the same adverbial to be adjoined to different slots.

(3) diagrams the basic sentence structure in Chinese, which follows Tang's (1990) analysis.

(3) IP



According to Tang (1990), the D/F adverbial is adjoined to V' and the object complement is in the Spec of VP. The manner adverbial is adjoined to Pr'. The verb obligatorily raises to Pr in order to satisfy the θ-criterion. After verb raising to Pr, both the object and the D/F adverbial are left behind. The D/F adverbial can intervene between the verb and the object after Chomsky-adjunction. Since Chinese is weak in morphology, further verb movement is not allowed. If the verb further moves to Infl, all adverbials, including the manner adverbial, should be able to intervene between the verb and the object. But this does not occur in Chinese. Verb raising to Infl in Chinese will lead to a violation of θ-criterion because the θ-grid cannot be transmitted from the verb to the object in an opaque context.

Suppose the structure in (3) was represented in the IL grammar of both groups of

learners of Chinese. The learners, instead of adjoining the manner adverbial to Pr' and the D/F adverbial to V', adjoined all the adverbials to Pr'.[13] If the verb did not raise to Infl, all adverbials would be preverbal. If the verb raised to Infl, all adverbials would intervene between verb and object. Both possibilities were evidenced by the results of the experiment. The preverbal placement of all adverbials supported the lack of verb raising to Infl. On the other hand, the presence of VMO and VDFO in GP 1 learners' and some GP 2 learners' IL hinted verb raising, which resulted in adverbial intervention. Therefore, some learners seemed undecided in whether verb raising existed in Chinese.

But why did the learners have difficulty in determining whether verb raising exists in Chinese, especially when very raising to Infl is nonetheless present in English? There are two possibilities. The first is that the presence of VDFO might have misled the learners to entertain the possibility of VM

The second is the unspecified value of the morphological strength for Infl. (Eubank 1996, Vainikka and Young-Scholten 1996)

With respect to the first possibility, it is the positive evidence that drives the learners to accept optionality of verb raising. Chinese is weak in tense and agreement morphology. The negator *bu* or *meiyou* and almost all adverbials precede the verb. (Huang 1992) All this contributes to the supposition that verb raising does not exist in Chinese. But on the other hand, D/F adverbial intervention provides evidence that verb raising may exist in Chinese; otherwise, there should not be an adverbial type that can be inserted between verb and object. By comparing the positive evidence for and against verb raising, a learner may come to the conclusion that verb raising is optional in Chinese. Optionality implies that both verb raising and absence of verb raising are tenable, though it is undeniable that the former may probably be more prevailing in the IL grammar. (In the grammaticality task, 75% of acceptance of MVO by GP 1 compared with 25% of VMO, whereas 63.3% of acceptance of DFVO compared with 41.7% of VDFO.) But it may be because Chinese shows stronger evidence for absence of verb raising. The opaque context resulted from a lack of morphological inflection, the preverbal negators, and the preverbal placement of many adverbials support the

[13] The adjunction order of the two types of adverbial is not important here.

absence of verb raising. Thus, learners of Chinese might tend to decline verb raising in Chinese, even though they do not totally rule out its possibility. This then results in the general acceptance of preverbal placement as well as some acceptance of adverbial insertion.

Optionality of verb raising can also be accounted for by the feature value of Infl. The Weak Transfer Model (Eubank 1993/94, 1994, 1996) and the Minimal Trees Model (Vainikka and Young-Scholten 1994, 1996) hypothesize the incomplete transfer of syntactic configuration from L1 to L2 in SLA, which stands in contrast to the Full Transfer/Full Access Model (Schwartz and Sprouse 1994, 1996). The former two models postulate that transfer of syntactic configuration in SLA is incomplete, denying the transfer of every detail of the syntactic configuration from L1 to L2. The Weak Transfer Model claims that L2 learners would transfer the whole set of syntactic projections with headedness from L1 to IL grammar but the features of the functional projection are not transferred. This is based on the hypothesis that the lexicon and morphology of L1 are not transferred to L2 in any instance. The lack of a knowledge of L2 morphology, therefore, would lead to a non-specification of the strength of Infl, which, in turn, results in assigning an unspecified or inert feature value to Infl[14]. Since verb raising is closely related to the strength of morphological features of Infl, an inert value of Infl cannot signify the presence or absence of verb raising. Consequently, the learners would endorse optionality of verb raising in the IL. Evidence sought to support this model encompasses the data of acquisition of English adverb placement by French speakers (Eubank 1993/94) and acquisition of English negation by German speakers (Eubank 1996).

The Minimal Trees Model also hypothesizes optionality of verb raising in IL grammar. It differs from the Weak Transfer Model by proclaiming that all functional projections are not transferred from L1 to L2. Put differently, only bare VP exists in the early L2 grammar. The projection of functional categories is a step-by-step process,

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[14] There is much complexity here as according to Eubank (1993/94, 1994, 1996), Infl can be broken up into two functional projections, T (Tense) and Agr (Agreement) and T is assumed to be inert and Agr to be non-finite. It is T which causes optionality of verb raising. But since the division has no effect on the present analysis, I do not go into the details of the structure but collapse them together into Infl.

with the learner taking in the input data to create IP and then CP[15]. As a result, only the bare VP transferred from L1 resembles the headedness and syntactic configuration of L1; all the functional categories are projected based on the input data, and therefore, show no evidence of L1 transfer. As long as IP is not transferred, the feature value of Infl is specified late, resulting in a stage of learning where verb raising is optional. The acquisitional data of German by Korean, Turkish, Italian and Spanish-speaking adults were sought to support this model. (Vainikka and Young-Scholten 1996)

Both the Weak Transfer Model and the Minimal Trees Model hypothesize an inert value for Infl at an early stage of L2 acquisition and the specification of the feature value for Infl by the acquisition of the agreement and tense paradigm. Once the feature value of Infl is specified and the morphological strength is ascertained, optionality of verb raising will no longer persist. For example, the acquisition of English morphology will convince the learner of absence of verb raising in English, while the morphology in French and German will induce verb raising.

Coming back to Chinese, if we follow the Weak Transfer Model or the Minimal Trees Model, we can assume that most of our GP 1 learners and a few of our GP 2 learners were at the stage of specifying the feature value for Chinese Infl. As long as the Infl feature value was not specified, they allowed optionality of verb raising in IL grammar, resulting in the acceptance and production of VMO and VDFO structures, along with MVO and DFVO. In languages with some morphological transformations,

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[15] According to Vainikka and Young-Scholtn (1994, 1996), a learner may undergo 4 stages in acquiring the target syntactic configuration. They are the VP-stage (projection of bare VP), the FP-stage (projection of the Finite Phrase, carrying a single, unspecified, IP-level functional projection), the Agr-stage (in association with the agreement paradigm) and the final CP-stage (projection of CP). The whole acquisitional process lacks an identification of the tense functional category (TP) because the acquisitional data in support of this model are based on acquisition of German. In German, tense features are carried by the head of CP. Therefore, projection of CP constitutes the final stage of the acquisition of tense morphology.

It is the FP-stage grammar that is responsible for the optionality of verb raising. Therefore, with the projection of Agr-phrase and CP, together with the appearance of the correspondent agreement and tense features, optionality of verb raising will be eliminated. It, in turn, implies that optionality of verb raising has close relation to the morphology paradigm.

acquisition of adverb placement can be studied in connection with acquisition of agreement and tense morphology. But since no morphological transformation is discernible in Chinese, the hypothesis of an inert Infl feature value cannot be supported. Another method to test verb raising is the placement of negators, in relation to the thematic verbs. If Chinese negators are allowed to follow the thematic verbs in IL grammar, it can evidence that verb raising does occur. But we do not have data of the acquisition of Chinese negator placement by English speakers.

In short, the presence of both DFVO and MVO, and VDFO and VMO in the IL grammar is very strong evidence that the learners postulated optionality of verb raising. In explaining optionality of verb raising, we may put forward two accounts. The first is that the learners overgeneralized adverbial intervention to the manner adverbials, on the basis of VDFO. The second is that the inert Infl feature value endorsed optionality of verb raising. The two accounts, however, do not exclude each other. The inert Infl value, in addition to the positive evidence of VDFO, might strongly convince the learners that verb raising was optional in Chinese.

One additional account for acceptance of adverbial intervention on a par with preverbal placement concerns the unconstrained adjunction adverbials to different slots.

This account assumes that the learners were trying different means of adverbial adjunction. There are two slots for the two types of adverbials, the Pr' and the V'. The learners might have been experimenting which adverbial should be adjoined to which slot. After they realized that adverbials in Chinese should be placed preverbally, they might automatically adjoin all adverbials to Pr'. This results in the acceptance of MVO, DFVO, and so on. However, input data of VDFO showed that adjunction of the D/F adverbial to V' was also possible. They then also accepted VDFO. But once they found that adverbial adjunction to V' was tenable in Chinese, they might relax the constraint on adverbial adjunction and also adjoined the manner adverbial to V', leading to the acceptance of VMO. All this results in the unconstrained adjunction of the manner and D/F adverbials to either Pr' or V'. MVO and VMO, and likewise DFVO and VDFO, were not preemptive since even though positive evidence contained only MVO and VDFO, there might not be negative evidence to inform the learners of the corresponding non-target structures. This then led to the acceptance of all these

structures.

Two reasons may be given to justify the adjunction of the manner and the D/F adverbials to either V' or Pr'. The first reason is that the learners assumed that V' and Pr' could license both the manner and the D/F adverbial, resulted from the generalization of MVO and VDFO to DFVO and VMO respectively. According to Tang (1990), the scope of modification of an adverbial decides where the adverbial should be adjoined and whether a head of a maximal projection could license this adverbial. In other words, an adverbial may only be adjoined to those maximal projection over which it has the scope (Section 3.2.2.3) If the learners assumed that both the manner and the D/F adverbial have scope over VP and PredP, these two types of adverbials could be adjoined to both of these two maximal projections. Tang (1990) has also claimed that the same adverbial can be licensed by different heads and the same head can license more than one type of adverbial.

Another reason to justify the non-restrictive adverbial adjunction is that the learners had not realized the scope of modification of the Chinese adverbials when they did the experiment. As a result, they might randomly adjoin them to either V' or Pr', resulting in the acceptance of DFVO, MVO, VDFO and VMO.

To conclude, either the optionality of verb raising account or the order of adverbial adjunction account can illustrate the generation of both the preverbal and inserted manner and D/F adverbials in the IL grammar. However, these two accounts obviously have taken different perspectives in accounting for the same problem. The optionality of verb raising account has taken the syntactic (verb raising) and morphological (the agreement paradigm in controlling verb raising) perspective while the order of adverbial adjunction account has adopted the aspect of the interface of syntax (adverbial adjunction) and semantics (adverbials' semantic content in affecting its licensing by heads). But even if we take the optionality of verb raising account, we still need to account for the acquisition of target adverbial adjunction order, as we shall see in the next two sections.

A remainder is that learning strategy might also affect the acceptance of VMO as well as VDFO. The desire to speak a foreign, non-native word orders might inspire the

learners to accept adverbial intervention, which is strictly prohibited in English. The adoption of this strategy is typically based on the hypothesis that English and Chinese are very different and therefore, their word orders should not correspond to each other. Hence, both the problems of the unlearning of postverbal manner adverbials and the acceptance of VMO and VDFO are plausibly analyzed from the perspective of learning strategy.

5.3.3 Adjunction order of manner and D/F adverbials

Another problem in GP 1 learners' IL grammar is that the adjunction of the manner and D/F adverbials to VP was in reverse order to the target language. As shown in (3), in Chinese, the manner adverbial adjoins to the PredP and the D/F adverbial to the VP, because the former has a larger scope of modification, so as to make it to be adjoined to a higher hierarchy than the latter.

GP 1 learners were more ready to accept DFMVO than MDFVO, though both of them are unacceptable in Chinese. The acceptance rate of the former was 63.3% and that of the latter was only 33.3%. Pair t-test shows that these two rates differ significantly ($t = 2.1558$, $p < 0.05$). Therefore, it was obvious that in GP 1 learners' IL grammar, there was a structural order of adverbial placement, with the manner adverbial being placed closer to the verb.

The question is how GP 1 learners might come to formulate such a principle of adverbial placement? We may examine this question from the preferred order of prenominal adjective. According to Danks (1971) and Martin (1969), there is an order preference for prenominal adjectives, for example, *a big red chair* is more preferred to *a red big chair*. On the other hand, prenominal adjectives are not subject to right-branching analysis but instead, they are viewed as independently modifying the noun, subject to multi-branching analysis. It is proposed that the more intrinsic the prenominal adjective to the noun, the more likely it is placed closer to the noun. Danks (1971) proposes an intrinsicalness scale: inherent and central to the nature of the object (e.g. place of origin); superficial property (e.g. color); relative to some reference object or condition (e.g. size); and relative to a personal judgment (e.g. possession). The inherent adjective is ranked the highest on the intrinsicalness scale and therefore, should be

placed closest to the noun than other prenominal adjectives. Apart from the inherent adjective, other prenominal adjectives should be ordered in such a way that color adjectives be placed closer to the noun than size adjectives, and size adjectives closer than the adjectives with personal judgment. This can explain why *a beautiful big red Chinese chair* is the most preferred option, among other prenominal adjective orders.

Whether the intrinsicalness scale can be applied to explain preverbal adverbial placement has not been exploded. But it seems that the relation between adjective and noun, and between adverbial and verb is similar; both the adjective and the adverbial can be collapsed into modifiers while the noun and the verb are modifees. Then the problem is what intrinsicalness category the manner adverbial and the D/F adverbial should belong to. We cannot felicitously match either type of adverbial with the categories in the intrinsicalness scale. But if we just apply the general principle of intrinsicalness, we can categorize the manner adverbial as the superficial property of the action being described and thus, it may be comparable to the color category, similar to *red* in relation to *chair*. It is hard, though may not be impossible, to categorize the D/F adverbial according to its intrinsicalness to the verb. It appears to be an adverbial equivalent to the prenominal numerals like *three* in *three big red chairs*. As a result, if the learners followed the intrinsicalness scale to adjoin adverbials, it is no surprise that the D/F adverbial was postulated as being located farther than the manner adverbial to the verb.[16]

English also exhibits such a tendency of adverbial placement, with the manner adverbial preferred to be placed closer to the VP.

(1) a. She practiced playing piano <u>industriously</u> <u>for a whole day</u>.
    b. *She practiced playing piano <u>for a whole day</u> <u>industriously</u>.
(2) a. He read the news <u>quickly</u> <u>once</u>.

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[16] Note that the intrinsicalness scale analysis for adverbial placement is different from the scope of modification analysis in one important respect: the former is a multi-level analysis while the latter is a hierarchical analysis. If the intrinsicalness scale analysis for adverbial placement is on the right track, the learners still need to change the analytical method of co-occurring adverbials from multi-level analysis to hierarchical analysis in order to acquire target adverbial placement in Chinese.

b. ?He read the news once quickly.

By comparing (1a) and (1b), (2a) and (2b), we can see that the English manner adverbial is preferred being placed closer to VP, which might hint that it is more intrinsic than the D/F adverbial to VP.[17]

If GP 1 learners followed the principle of intrinsicalness in placing adverbials, they might not realize the effect of scope of modification on adverbial placement. Instead, they imposed linear analysis on the preverbal VP adverbials. This deviates from the principles of target adverbial adjunction because according to Bowers (1993) and Tang (1990)[18], the scope of modification of an adverbial determines where the adverbial should be adjoined. Since the D/F adverbial can only modify an action, it is adjoined to the VP, whereas the manner adverbial is adjoined to the PredP because it can modify a proposition. Thus, in order to learn target adverbial placement in Chinese, GP 1 learners might, first of all, abandon the incorrect hypothesis of intrinsicalness scale in analyzing preverbal adverbials in their IL grammar.

5.3.4 Why is adverbial placement learnable?

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[17] Whether adjunction of some English adverbials follows the intrinsicalness scale has not been verified.

[18] In fact, Tang's (1990) account about Chinese adverbial adjunction might be problematic. It is because to claim that D/F adverbials have smaller scope of modification than manner adverbials might be counter-intuitive. This indeed was also shown in the results of the judgments for MDFVO and DFMVO by GP 1 learners. Though the judgments of the learners might be influenced by their L1 English, there seems to exist a universal principle that the properties of the action, realized as manner adverbials, are 'closer' to the verb than the duration and frequency of the action. As a result, the manner adverbials might have smaller scope of modification than the D/F adverbials. This principle obviously prevails in English, but Chinese seems to counter this principle in surface structure, because the D/F adverbials may intervene between verb and object, appearing embedded within the verb phrase. Of course, we can accommodate the principle of adverbial adjunction and adverbial adjunction facts in Chinese by postulating that Chinese D/F adverbials are based-generated before the manner adverbials, generating the DFMVO structure. Then the D/F adverbials move downward, either to attach to the object noun phrase or to post-object position. Preverbal D/F adverbials are attested in Chinese but we have to innovate an account for the downward movement of D/F adverbials when they are non-definite.

GP 2 learners' IL grammar appeared to be more consistent and most learners were able to acquire native-like competence in adverbial placement. A few, though, still had difficulty in rejecting preverbal D/F adverbial or even manner adverbial insertion.

The major concern of GP 2 learners' data is learnability. As discussed in the previous two sections, GP 1 learners might have made three hypotheses that shaped their grammar. First, they hypothesized optionality of verb raising and adjunction of both manner and D/f adverbials to Pr'. Second, they postulated non-restrictive adverbial adjunction. Third, they assumed an order of adverbial adjunction contrary to what is proposed in Tang (1990), that is, they preferred DFMVO[19] but in Tang (1990), the manner adverbial is adjoined to Pr' and the D/F adverbial is adjoined to V'. The adjunction of the two types of adverbials to two different hierarchical levels amounts to D/F adverbial insertion but not manner adverbial insertion.

Adverbial placement in Chinese is learnable only when first of all, the learners have given up verb raising in Chinese, if we sustain the assumption that the simultaneous acceptance of preverbal and inserted manner and D/F adverbials is caused by optionality of verb raising. This is not easy as we can see indeterminacy in allowing verb raising still exist in GP 2 learners' IL grammar. Five GP 2 learners accepted DFVO, on a par with VDFO. As the knowledge of the target language increases and more positive evidence is received, the learners may more readily give up verb raising in Chinese. Except for the VDFO structure, Chinese exhibits no evidence of verb raising. Chinese is not rich in morphology and therefore, verb raising will lead to a violation of θ-criterion. The negator *bu* or *meiyou* precedes the main verb. Many other adverbials also precede the main verb. But as Chinese is a wh-in-situ language, the evidence about the absence of movement of main verb across the subject and the insertion of dummy operation in Infl is unavailable, which indirectly slacken the whole process of unlearning verb raising in Chinese.

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[19] But it was shown from the results of the experiment (especially the results from the investigation of individual learners' performance) that not all subjects had this hierarchy in their representation . Some fluctuated on the order of adverbial adjunction and one learner even preferred MDFVO over DFMVO.

As long as verb raising is unlearned,[20] the learners may return to the previous grammar and hypothesize that all adverbials should be placed preverbally. However, they cannot maintain this hypothesis for long as the revised IL grammar is unable to generate VDFO though it is available in the input data. The natural move at this stage is to revise the adverbial adjunction process.[21] They may try to move the manner adverbial downward and adjoin it to V', but it still cannot generate VDFO as only DFVMO is generated by this grammar. They may adjoin both the two adverbials to V', but it is instantly rejected by the input data of MVO since for this adjunction, only VDFMO is possible but not others. The final means that makes MVDFO possible is to move the D/F adverbial downward and adjoin it to V', while the manner adverbial remains in Pr'. But this order is, at least to some learners, contrary to the original hypothetical order of adverbial adjunction of DFMVO. Therefore, there may be an intermediate step at which the learners alter the adjunction of the two and derive MDFVO[22]. Then, the D/F adverbials can be moved downward to adjoin to V', generating VDFO and MVDFO, the target structures supported by positive evidence.

It is arguable if semantics can help in expunging the non-target adverbial adjunction. According to Tang (1990), different levels of adverbial adjunction are due to different scope of modification. The manner adverbial modifies the PredP whereas the D/F adverbial modifies the VP. Hence an identification of different modification scope of the two types of adverbials may trigger the acquisition of their target

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[20] The time needed for dealing with the problem of verb raising is unknown but based on the results of GP 2 learners, we may assume that it takes a very long time and even the advanced learners having received more than 4 years of formal education in Chinese were still struggling with this problem. Five GP 2 learners accepted both DFVO as well as VDFO, one only accepted DFVO but not VDFO and one also accepted VMO, in addition to MVO.

[21] Perhaps before revising the adverbial adjunction process, the learners should undergo a stage where the analytical procedure for adverbial co-occurrence is amended. If the learners adopt a linear analysis of adverbial adjunction, they should now change to hierarchical analysis.

[22] The acceptance of MDFVO (at a rate of 33.3%) by some GP 1 learners might indicate that they were undergoing a revision process of adverbial adjunction and tried to generate the target structures MVDFO (46.7% of acceptance). However, it might be argued that some GP 1 learners had already had the initial grammar of MDFVO adverbial adjunction structure. What they had to do to derive target placement was simply to unlearn verb raising.

adjunction slots. But whether scope of modification plays a role in acquisition is hard to tell. First, how the scope of modification of each type of adverbial is identified is unknown. Second, whether syntactic configuration of adverbial placement or semantic connotation of an adverbial could serve as triggers for the identification of adverbial scope is even more of a mystery. We need more understanding of adverbial scope and its interface with adverbial adjunction before we can further investigate the triggers for the acquisition of adverbial adjunction.

Summarizing, we can account for learnability of adverbial placement if absence of verb raising in Chinese has been confirmed. Once absence of verb raising is confirmed, the learners should revise the process of adverbial adjunction since their IL grammar cannot accommodate VDFO. Only one type of adverbial adjunction is able to accommodate all the facts of adverbial placement and that is the adjunction of manner adverbial to PredP and D/F adverbial to VP. GP 2 learners' data supply the strongest evidence that adverbial placement really is learnable.

The revision of adverbial adjunction order can be the only step to acquire target adverbial placement if we assume the unconstrained adverbial adjunction to either V' or Pr', but not optionality of verb raising, is the cause of simultaneous acceptance of preverbal as well as inserted manner and D/F adverbials. (See Section 5.3.2) However, there seems to be no positive evidence which directly informs the learners of the impossibility of the licensing relationship between the manner adverbials and V', as well as between the D/F adverbials and Pr' even though positive evidence can inform the learners that the modification scope of the manner adverbials is compatible with Pr' and the D/F adverbials can be licensed by V'. As a result, in order to acquire the target adverbial placement patterns, the learners must rely on the semantic hints of the adverbials. However, as discussed before, how semantic connotation of an adverbial affects its adjunction is not clear, not to mention how semantic evidence helps the acquisition of target adverbial adjunction. Therefore, though, by looking at the results of GP 2 learners, we know that adverbial placement is learnable, we still cannot look into the process of learning and the triggers for acquiring the target adverbial adjunction.

5.3.5 Competence and performance

Recall that even among GP 2 learners, some consistently rejected DFVO and VODF in the grammaticality judgment task but produced them in the production task. (See Section 4.4.3) This problem may be accounted for in two ways. First, because the nature of the two tasks was different, the learners might perform differently in the two tasks and the results derived could be different (White et al. 1997).[23] Second, because the production task was a less controlled task, the learners were at ease with the structure of the produced sentences and might not notice that adverbial placement was what the experimenter looked at in the sentences. Consequently, they used less metalinguistic knowledge. In the grammaticality judgment task, the learners were more alert as they were asked to give judgments on a number of sentences and they had to circle the problematic parts. They then might use more metalinguistic knowledge and this accidentally led to a better achievement (Kadia 1988).[24]

The second cause seems more capable of accounting for the inconsistency we observe in the data of the two groups of learners and the Control group. The Control group showed very consistent acceptance and rejection rates of a specific syntactic structure in the grammaticality judgment task. In the production task, they mostly only produced VDFO, but not DFVO or VODF. This helps us to refute the first cause and makes us to hypothesize that metalinguistic knowledge may help the grammar of a learner appear to be native-like. In this experiment, the learners might use less controlled knowledge and more subconscious linguistic knowledge in the production task. If some of the learners' IL grammar deviated from the target grammar, they might produce ungrammatical sentences, like DFVO and VODF. But in the grammaticality judgment task, the learners were asked to judge the grammaticality of a sentence and even circle the problematic part. Consequently, they might use more metalinguistic

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[23] In White et al. (1997), two tasks have been designed to test the subject-object and local and long-distance binding of English pronouns. The results showed that the Japanese-speaking learners, the French-speaking learners and the natives yielded a significantly higher proportion of correct acceptances of antecedents in the story task than the picture task.

[24] In Kadia (1988), a Chinese-speaking learner of English was tested on the dative shift after formal instruction. She performed much better on the written test than the oral test and presumably, the

knowledge[25], which nevertheless endorsed VDFO. Therefore, though many GP 2 learners seemed to have acquired target adverbial placement in Chinese, some just used metalinguistic knowledge, which might be accidentally compatible with the target grammar. If we follow this reasoning, some advanced (GP 2) learners' IL grammar seemed still severely affected by transfer and overgeneralization (resulting in the production of VODF and DFVO respectively), and adverbial intervention was difficult to acquire, though might be easy to learn[26].

But this analysis is hypothetical and there may be some other reasons behind this phenomenon. What's more, even if there is incongruity between acceptance and production of some structures in the two tasks, we still need to explain learnability of adverbial placement because some GP 2 learners did perform equally well in the two tasks.

5.4 Conclusion

This section is divided into two subsections. The first subsection summarizes the findings of this study. The second subsection, based on the findings, raises some questions for future research.

5.4.1 The findings

This results of the experiment address the following research questions:

1. No negative transfer

The native speakers of English appeared not to transfer their L1 properties in acquiring adverbial placement in Chinese. Chinese adverbials were generally not placed in post-object positions in the production task and post-object adverbials were largely judged unacceptable in the grammaticality judgment task.

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former test aroused more metalinguistic knowledge.

[25] The metalinguistic knowledge might come from classroom instructions on postverbal placement of D/F adverbials.

[26] See the difference between 'learned' and 'acquired' knowledge in Schwartz (1993).

2. Overgeneralization

The English learners underwent a stage where the rule of preverbal adverbial placement was overgeneralized to the D/F adverbials. Since most Chinese adverbials are placed preverbally and presumably once the learners had noticed the preverbal placement of many adverbials, they also generalized this placement position to D/F adverbials even though D/F adverbials are not allowed to occur preverbally.

3. Learnability

Adverbial placement in Chinese was learnable, following the developmental hypothesis of the unlearning of postverbal manner adverbial placement, the unlearning of verb raising and a revision of adverbial adjunction order. Unlearning of verb raising might or might not be a necessary stage. (See Section 5.3.2) Besides, the input and the learning strategy might play a role in the acquisitional process of adverbial placement.

It should be noticed that the analysis given for the experimental results has only taken into account a few possible perspectives of investigating the acquisition of adverbial placement. In fact, we have not considered, and it is impossible to consider, all the probable variables in the whole learning process, for example, the instructions the learners received, the learning environment, the personality of the learners, the learning motivation and anxiety, the effects of other languages that the learners knew on acquisition of Chinese and so on.

5.4.2 The questions for future research

The questions raised by this research are many. Among them, the most difficult one is the absence of transfer. If the learners do not transfer properties of adverbial placement from English to Chinese, what is their initial hypothetical slot for adverbials? Is there a default pattern in SLA for adverbial placement of any language? Does the basic word order affect adverbial placement? How might input and learning strategy affect the acquisitional process? Why did the French learners transfer their L1 properties to the IL grammar in the acquisition of adverbial placement in English (White 1991), but the English learners did not exhibit evidence of transfer in this study? Each of these questions deserves further research.

Moreover, it is assumed that two factors affect the acquisition of adverbial placement in Chinese. The first is verb raising and the second is adverbial adjunction. The former is a syntactic process whereas the latter is a matter of semantic categorization. They interface with each other in the acquisition process, as well as in the development of IL grammar. It was assumed in Section 5.3 that the learners might unlearn verb raising prior to learning different levels of adverbial adjunction. However, this acquisitional order is hypothetical and the learning stages may converge, and interact and affect each other.[27]

With respect to the hypothesis of verb raising in the learners' IL grammar, more concrete evidence may be needed. For example, the inclusion of structures like $VPP_{ADV}O$, $VNP_{ADV}O$ and VAO in the research may help unravel this problem. The learners may also be tested on the acceptance of the structure in which the negator follows the main verb. But even if verb raising is confirmed in the IL grammar, to show how it is unlearned is another big question. It was assumed in this research that the learners did unlearn verb raising and acquire the target structure in the end. But as mentioned in Section 5.3.2, there is evidence for and against verb raising. We know little as to how the learners came to the decision that verb raising was untenable in Chinese. If we follow the hypothesis that an inert feature value of Infl is specified in a developmental stage, this problem can be resolved as the awareness of absence of agreement and tense morphology in Chinese could give rise to the IL grammar which suppresses verb raising.

The adverbial classification is more problematic as few theoretical accounts have discussed this matter. Tang (1990) has mentioned the different modification scope of adverbials but the exact semantic content of an adverbial that makes it have scope over an XP is still unclear. In addition, similar adverbials seem to have different scopes in different languages. The manner adverbials in Chinese only have scope over Pr' but the manner adverbials in English can have scope over Pr' or V'. (Bowers 1993) The fundamental question then is: How can an adverbial of similar semantic content differ in

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[27] The two processes may not be so clear-cut. In other words, the learners may revise adverbial adjunction order along with the unlearning of verb raising. This is very likely as GP 1 learners accepted both MVDFO (46.7%) and DFMVO(63.3%).

modification scope in different languages? Even if this is the case, how can the scope of modification of an adverbial be learnable by native speakers of that language?

Another curious question is what induces the learners to have an adjunction order for the two types of adverbial. Does this stem from the grammatical category or from the semantic connotation of the two types of adverbials? On the other hand, how the latter works out is unknown. Is there evidence that informs the learners of the modification scope of different adverbials in Chinese? Even if the former syntactic account is adopted, how do the learners represent the semantics of the adverbials when they are in different levels of adjunction? Do the learners represent them in terms of modification scope? Or do the learners have some other semantic considerations, like the distinction 'Manner/Agent', 'Event/AGR', and 'Speaker' proposed by Travis (1988)? The interface between syntax and semantics in terms of adverbial placement is the biggest puzzle that remains unsolved.

Moreover, the results of the post-object placement of D/F adverbials have not been investigated in depth. As mentioned before, the definiteness effects play a role in D/F adverbial placement. An independent study should be specially designed to test how the learners react to a collection of Chinese structures that are associated with the definiteness effects.[28]

Finally, if we want to know whether learners of Chinese should go through a stage of verb raising, we also need to investigate how other language learners acquire adverbial placement in Chinese. If verb raising is not allowed in their native language, do they also have similar IL grammar as the English learners'? If verb raising occurs in their native language, will they find adverbial insertion more preferable, or even the only acceptable structure? All this can serve to support or reject the hypotheses presented in Section 5.3.

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[28] Most probably, if we relate the definiteness effects with adverbial placement, we should look into the *dou* construction, which is used when the D/F adverbial is definite. The production task showed that both GP 1 and GP 2 learners, unlike the Controls, did not often produce *dou* constructions, even if some D/F adverbials denoted a strong sense of definiteness. Of course, low rate of production does not imply its non-existence in the learners' competence. This calls for further research.

In conclusion, this research raises a lot of questions about acquisition of adverbial placement in Chinese. Some are related to transfer and therefore, are confined to acquisition of Chinese by English speakers. However, some should be looked into from a larger SLA perspective, for example, optionality of verb raising and the interface of adverbial placement and semantic connotation of adverbials. Each issue deserves further research. In addition, more similar research needs to be done to further look into the details of the learning process, and the IL grammar of adverbial placement and the associated syntactic and semantic structures. The data from other language learners of Chinese will be particularly useful.

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Appendix A

Elicited Production Task

Manner Adverbials:

（靜靜地、報紙、看）
（ **jingjing-de, baozhi, kan** ）

（專心地、功課、做）
（ **Zhuanxinde, gongke, zuo** ）

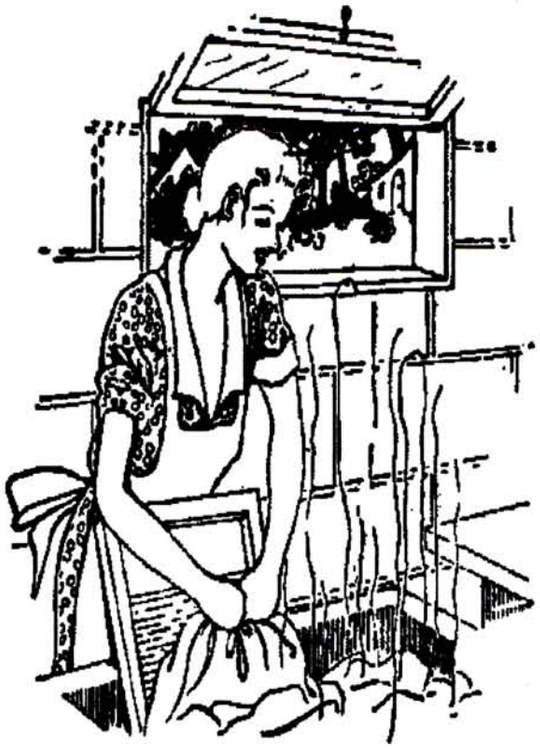
（大聲地、吵架）
（ **dashengde, chaojia** ）

（小心地、畫、畫）
（ **xiaoxinde, hua, hua** ）

Appendix A

Elicited Production Task

Duration adverbials:



（一整晚、衣服、洗）
（ **yizhengwan, yifu, xi** ）

（五個 小時、藍球、打）
（ **wuge xiaoshi, lanqiu, da** ）

（半天、書、看）
（ **bantian, shu, kan** ）

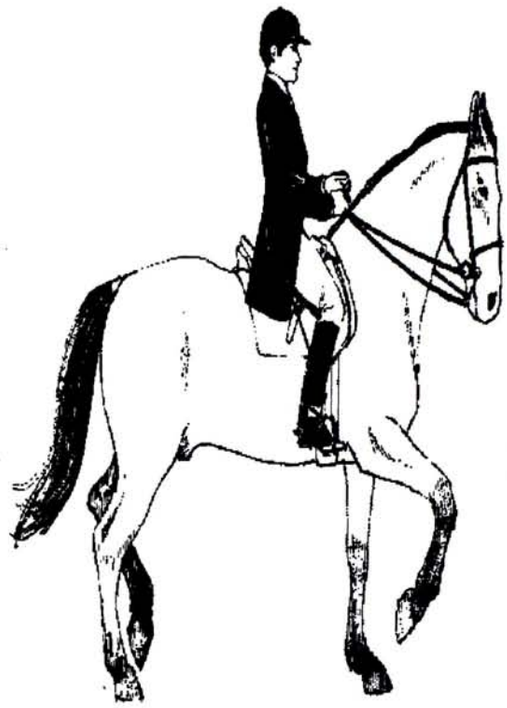
（一整天、魚、釣）
（ **yizhengtian, yu, diao** ）

Appendix A

Elicited Production Task

Frequency adverbials:

（幾次、歌、唱）
（ jici, ge, chang ）



（兩次、馬、騎）
（ liangci, ma, qi ）

（五次、電話、打）
（ wuci, dianhua, da ）

（一回、鋼琴、彈）
（ yihui, gangqin, tan ）

Appendix B

Grammaticality Judgment Task

The test sentences

MVO

1. 小李 努力地 溫習 功課。
   XiǎoLǐ nǔlìde wēnxí gōngkè.
2. 他 低聲地 講出 一個 秘密。
   Tā dīshēngde jiǎngchū yīge mìmì.
3. 那 同學 很 小心地 回答 問題。
   Nà tóngxué hěn xiǎoxīnde huídá wèntí.
4. 小張 很快地 看完 這 本 書。
   XiǎoZhāng hěnkuàide kànwán zhè ben shū.

VMO

5. 他 講出 低聲地 一個 秘密。
   Tā jiǎngchū dīshēngde yīge mìmì.
6. 那 同學 回答 很 小心地 問題。
   Nà tóngxué huíd hěn xiǎoxīnde wèntí.
7. 小張 看完 很快地 這 本 書。
   XiǎoZhāng kànwán hěnkuàide zhè ben shū.
8. 小李 溫習 努力地 功課。
   XiǎoLǐ wēnxí nǔlìde gōngkè.

VOM

9. 他 講出 一個 秘密 低聲地。
   Tā jiǎngchū yīge mìmì dīshēngde.
10. 那 同學 回答 問題 很 小心地 。
    Nà tóngxué huíd wèntí hěn xiǎoxīnde.
11. 小張 看完 這 本 書 很快地。
    XiǎoZhāng kànwán zhè ben shū hěnkuàide.
12. 小李 溫習 功課 努力地。
    XiǎoLǐ wēnxí gōngkè nǔlìde.

DFVO

13. 他 三次 打了 電話，還是 打 不 通。
    Tā sāncì dǎle diànhuà, háishì dǎ bù tōng.
14. 他 半天 看了 報紙。
    Tā bàntiān kànle bàozhǐ.
15. 小王 昨天 一天 跳了 中國 舞。
    XiǎoWáng zuótiān yītiān tiàole Zhōngguó wǔ.

16. 小玲 幾趟 做過 點心，便 不 做 了。
Xiǎolíng jǐtàng zuòguo diǎnxin, biàn bú zuò le.

VDFO

17. 他 打了 三次 電話，還是 打 不 通。
Tā dǎle sāncì diànhuà, háishì dǎ bù tōng.

18. 他 看了 半天 報紙。
Tā kànle bàntiān bàozhǐ.

19. 小王 昨天 跳了 一天 中國 舞。
XiǎoWáng zuótiān tiàole yìtiān Zhōngguó wǔ.

20. 小玲 做過 幾趟 點心，便 不 做 了。
Xiǎolíng zuòguo jǐtàng diǎnxin, biàn bú zuò le.

VODF

21. 小王 昨天 跳了 中國 舞 一天。
XiǎoWáng zuótiān tiàole Zhōngguó wǔ yìtiān.

22. 小玲 做過 點心 幾趟，便 不 做 了。
XiǎoLíng zuòguo diǎnxin jǐtàng, biàn bú zuò le.

23. 他 看了 報紙 半天。
Tā kànle bàozhǐ bàntiān.

24. 他 打了 電話 三次，還是 打 不 通。
Tā dǎle diànhuà sāncì, háishì dǎ bù tōng.

VDF_{OBL}

25. 怎麼 小陳 還 不 來，我們 等了 半個 小時 了。
Zěnme XiǎoChén hái bù lái, wǒmen děngle bànge xiǎoshí le.

26. 麻將，我 昨天 打了 五個 小時。
Májiàng, wǒ zuótiān dǎle wǔge xiǎoshí.

27. 他 很 喜歡 騎 馬，只 一 星期 已 騎了 兩次。
Tā hěn xǐhuan qímǎ, zhǐ yì xīngqī yǐ qíle liǎngcì.

28. 這齣 電影 很好 看，我 看了 三次。
Zhè chū diànyǐng hěn hǎo kàn, wǒ kànle sāncì.

$DF_{OBL}V$

29. 麻將，我 昨天 五個 小時 打了。
Májiàng, wǒ zuótiān wǔge xiǎoshí dǎle.

30. 他 很 喜歡 騎 馬，只 一 星期 已 兩次 騎了。
Tā hěn xǐhuan qímǎ, zhǐ yì xīngqī yǐ liǎngcì qíle.

31. 怎麼 小陳 還 不 來，我們 半個 小時 等了。
Zěnme XiǎoChén hái bù lái, wǒmen bànge xiǎoshí děngle.

32. 這齣電影很好看，我三次看了。
Zhè chū diànyǐng hěn hǎo kàn, wǒ sāncì kànle.

VV

33. 他看報紙看了半天。
Tā kàn bàozhǐ kànle bàntiān.

34. 他打電話打了三次，還是打不通。
Tā dǎ diànhuà dǎle sāncì, háishì dǎ bù tōng.

35. 小玲做點心做過幾趟，便不做了。
Xiǎolíng zuò diǎnxīn zuòguo jǐtàng, biàn bú zuò le.

36. 小王昨天跳中國舞跳了一天。
XiǎoWáng zuótiān tiào Zhōngguó wǔ tiàole yìtiān.

$NP_{ADV}VO$

37. 李小姐明天來香港。
Lǐ xiǎojie míngtiān lái Xiānggǎng.

38. 我早上八點起床。
Wǒ zǎoshàng bādiǎn qǐ chuáng.

$VONP_{ADV}$

39. 我 起床早上八點。
Wǒ qǐ chuáng zǎoshàng bādiǎn.

40. 李小姐來香港明天。
Lǐ xiǎojie lái Xiānggǎng míngtiān.

$PP_{ADV}VO$

41. 李四跟陳老師學習音樂。
Lǐsì gēn Chén lǎoshī xuéxí yīnyuè.

42. 他在床上做功課。
Tā zài chuáng shàng zuò gōngkè.

$VOPP_{ADV}$

43. 李四學習音樂跟陳老師。
Lǐsì xuéxí yīnyuè gēn Chén lǎoshī.

44. 他做功課在床上。
Tā zuò gōngkè zài chuáng shàng.

AVO

45. 王同學常常看電視。
Wáng tóngxué chángcháng kàn diànshì.

46. 他很少去圖書館。

Tā hěnshǎo qù túshūguǎn.

VOA

47. 王 同學 看 電視 常常。
Wáng tóngxué kàn diànshì chángcháng.

48. 他 去 圖書館 很少。
Tā qù túshūguǎn hěnshǎo.

MDFVO

49. 要 有 好前途，你 得 努力地 幾年 唸 漢語。
Yào yǒu hǎo qiántú, nǐ děi nǔlìde jǐnián niàn hànyǔ.

50. 他 放假 的 時候，就 會 開心地 一回 做 中國 菜。
Tā fàngjià de shíhòu, jiù huì kāixīnde yìhuí zuò Zhōngguó cài.

DFMVO

51. 老王 每天 都 兩遍 習慣地 打 太極。
LǎoWáng měitiān dōu liǎngbiàn xíguànde dǎ tàijí.

52. 李四 半天 專心地 聽了 音樂。
Lǐsì bàntiān zhuānxīnde tīngle yīnyuè.

VOMDF

53. 老王 每天 都 打 太極 習慣地 兩遍。
LǎoWáng měitiān dōu dǎ tàijí xíguànde liǎngbiàn.

54. 李四 聽了 音樂 專心地 半天。
Lǐsì tīngle yīnyuè zhuānxīnde bàntiān.

VODFM

55. 要 有 好 前途，你 得 唸 漢語 幾年 努力地。
Yào yǒu hǎo qiántú, nǐ děi niàn hànyǔ jǐnián nǔlìde.

56. 他 放假 的 時候，就 會 做 中國 菜 一回 開心地。
Tā fàngjià de shíhòu, jiù huì zuò Zhōngguó cài yìhuí kāixīnde.

MVODF

57. 小張 靜靜地 畫了 油畫 一天。
XiǎoZhāng jìngjìngde huàle yóuhuà yìtiān.

58. 我 每天 都 認真地 看 報紙 一 小時。
Wǒ měitiān dōu rènzhēnde kàn bàozhǐ yì xiǎoshí.

59. 我 聽 不 清楚，他 就 慢慢地 重覆 說話 一回。
Wǒ tīng bù qīngchu, tā jiù mànmànde chóngfù shuōhuà yìhuí.

60. 他 低聲地 問了 價錢 兩次。
Tā dīshēngde wènle jiàqián liǎngcì.

DFVOM

61. 他 兩次 問了 價錢 低聲地。
Tā liǎngcì wènle jiàqián dīshēngde.

62. 小張 一天 畫了 油畫 靜靜地。
XiǎoZhāng yìtiān huàle yóuhuà jìngjìngde.

63. 我 聽 不 清楚，他 就 一回 重覆 說話 慢慢地。
Wǒ tīng bú qīngchu, tā jiù yìhuí chóngfù shuōhuà mànmànde.

64. 我 每天 都 一 小時 看 報紙 認真地。
Wǒ měitiān dōu yì xiǎoshí kàn bàozhǐ rènzhēnde.

MVDFO

65. 李四 專心地 聽了 半天 音樂。
Lǐsì zhuānxīnde tīngle bàntiān yīnyuè.

66. 要 有 好 前途，你 得 努力地 唸 幾年 漢語。
Yào yǒu hǎo qiántú, nǐ děi nǔlìde niàn jǐnián hànyǔ.

67. 老王 每天 都 習慣地 打 兩遍 太極。
Lǎowáng měitiān dōu xíguànde dǎ liǎngbiàn tàijí.

68. 我 每天 都 認真地 看 一小時 報紙。
Wǒ měitiān dōu rènzhēnde kàn yì xiǎoshí bàozhǐ.

69. 小張 靜靜地 畫了 一天 油畫。
XiǎoZhāng jìngjìngde huàle yìtiān yóuhuà.

70. 他 放假 的 時候，就 會 開心地 做 一回 中國 菜。
Tā fàngjià de shíhòu, jiù huì kāixīnde zuò yìhuí Zhōngguó cài.

71. 我 聽不清楚，他 就 慢慢地 重覆 一回 說話。
Wǒ tīng bù qīngchu, tā jiù mànmànde chóngfù yìhuí shuōhuà.

72. 他 低聲地 問了 兩次 價錢。
Tā dīshēngde wènle liǎngcì jiàqián.